FT-7900 Programmer Help

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FT-7900 Programmer Help

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by RT Systems, Inc.

The Programmer is designed to give you the ease and convenience of programming the memories and options of the radio from your PC.

Using the Programmer, you can create separate files for unique applications such as travel, emergency activities, or special events. These files can contain different settings, such as memories, power management features, and DTMF numbers, for each purpose.

The Programmer also gives you the ability to read a configuration from the radio. The configuration would be stored in a file on your computer to be changed easily. Then, with minimal button pushing, you can send the altered file back to program the radio.

FT-7900 Programmer Help

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Foreword

These help files are offered as reference for the features of the programmer and with some added information about the features and functionality of the radio.

The final reference for a feature of the radio is the Users' Manual for that radio. Any error, omission or misrepresentation of a radio's ability is unintentional.

The Programmer cannot make the radio do anything that it cannot do from the face of the unit. It makes it easier to set options for the existing functions.

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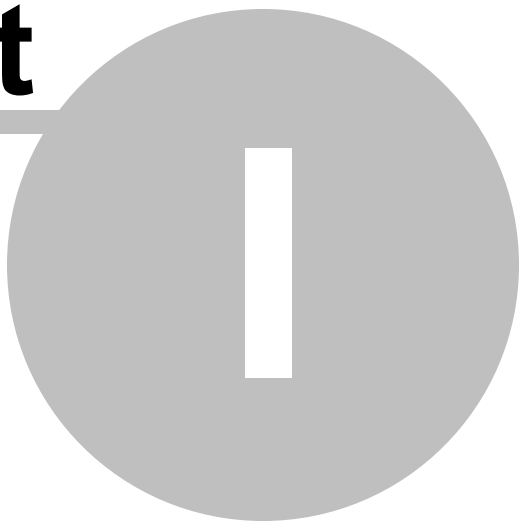
Part



1 What Is the Radio Programmer

The Programmer is designed to give you the ease and convenience of programming the memories and options of the radio from your PC.

Using the Programmer, you can create separate files for unique applications such as travel, emergency activities, or special events. These files can contain different settings, such as memories, power management features, and DTMF numbers, for each purpose.

These files are saved separately to be sent to the radio at any time. One file can be sent to the radio at any one time. Be sure to put everything you want into each file as you build it.

The Programmer also gives you the ability to read a configuration from the radio. The configuration would be stored in a file on your computer to be changed easily. Then, with minimal button pushing, you can send the altered file back to the radio.

Hardware Requirements

Hardware requirements for the Version 4 Programmers include

- A PC running Microsoft Windows: XP, Vista (32 or 64 bit), and Windows 7 (32 or 64 bit). The programmer will NOT work on Windows 98, ME, NT or 2000.
- The correct computer interface cable as shown in the ***Radio to Computer Cabling*** section of this help.

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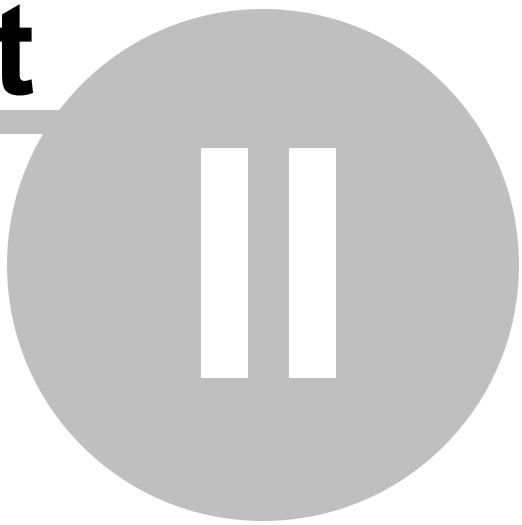
Part

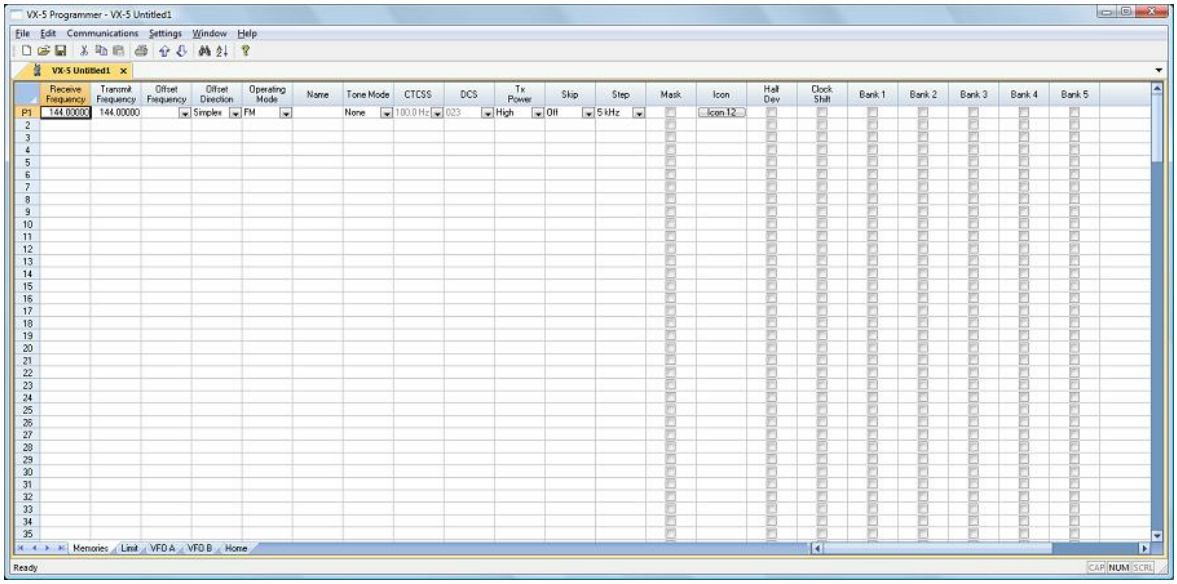


2 Getting Started

Creating the file

The Programmer gives you an easy way to access details for memory channels and other settings of the radio.

Open the programmer by clicking on the icon that was created during installation. The programmer opens to a default file.



Note: The default file contains memory channel information on several of the screens. This information is needed by the radio to "fill spaces in its little brain". You can change the default entries that you see; but anything that is completed in the default file cannot be left blank. The Programmer will help you with this. If information is required, it will warn you when it is missing.

Enter a receive frequency

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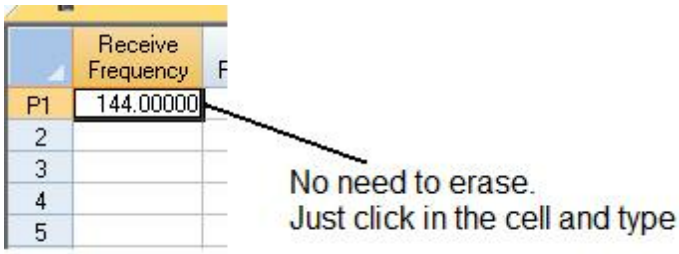
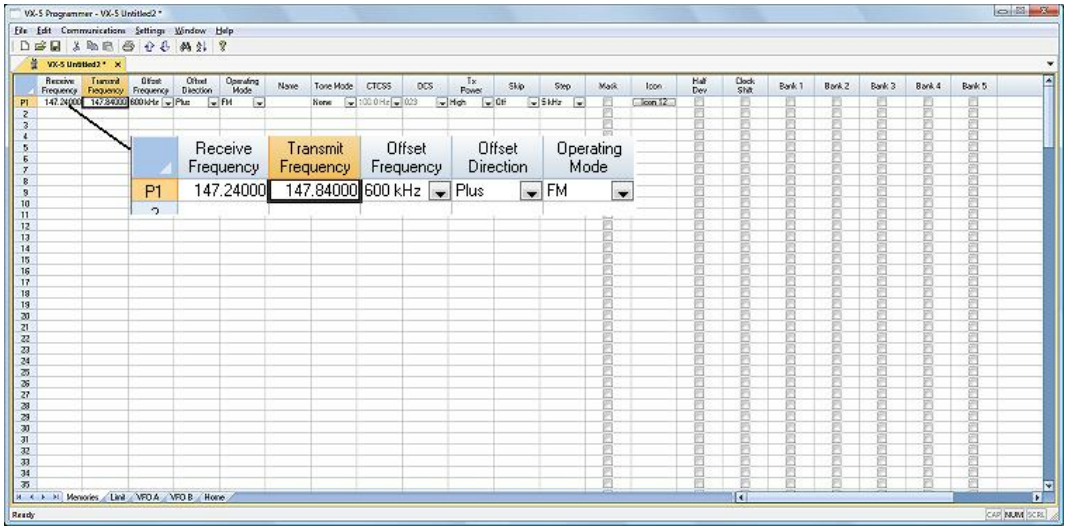


In this example we'll enter 147.240 MHz with standard offset, a Name of Local, and a tone of 100hz.

- Type one four seven period two four zero into the receive frequency column.
- Press Enter.
- The program completes much of the channel information with defaults. The Transmit frequency, Offset frequency, Offset Direction and Operating Mode are completed. This satisfies the "Standard offset" requirement from the original information.



- Press tab or use your mouse to select the Name cell. Type LOCAL. You choose upper or lower case on many radios. On others, only upper case letters are allowed. The programmer will help you. If a letter or symbol will not work on the radio, you will not be able to enter it here.

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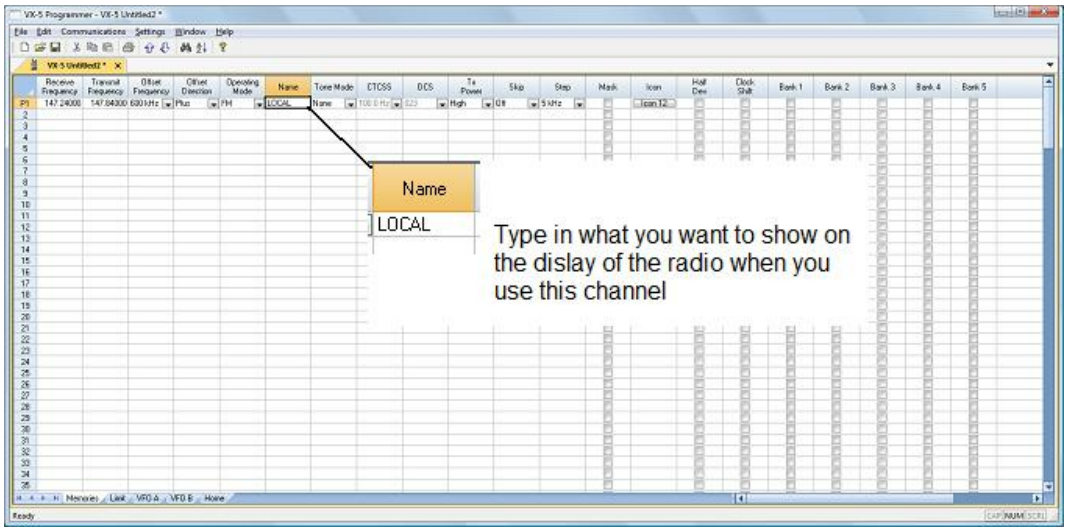
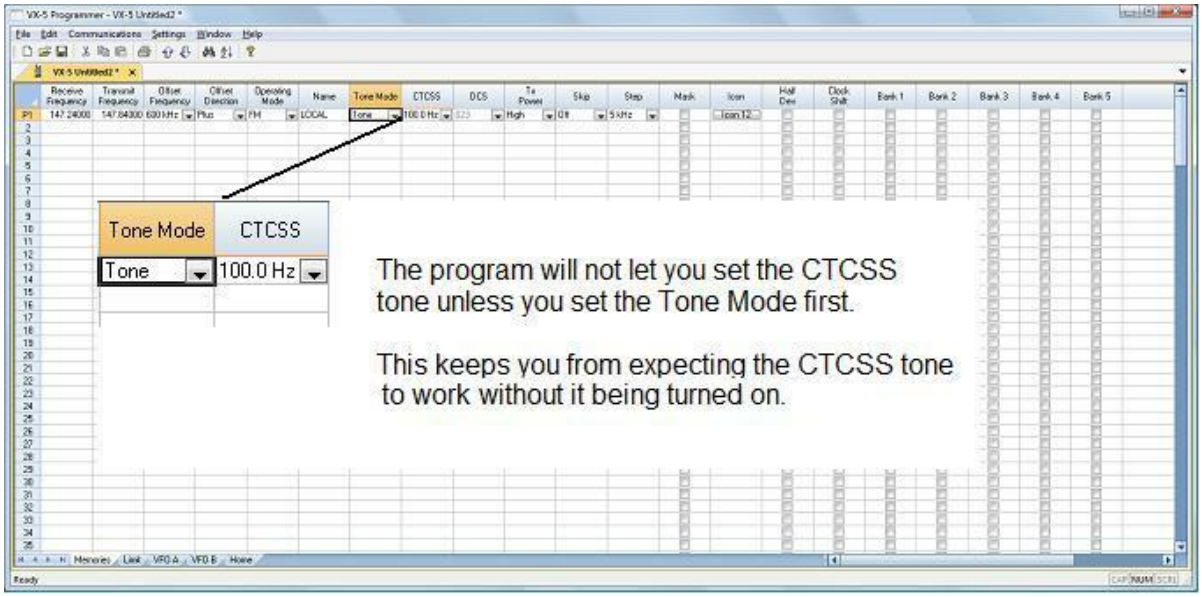


- Press tab to move to the Tone Mode cell. Setting up the tone of 100hz requires TW steps (just as it would if you were doing this from the face of the radio). Turn on Tone Mode AND then set the 100hz tone.



- This channel is ready to use.
- The other columns are set only if you need them for better radio performance. See Regular Memory Channels in this help and the User's Manual for the radio for details on what these features do and the settings

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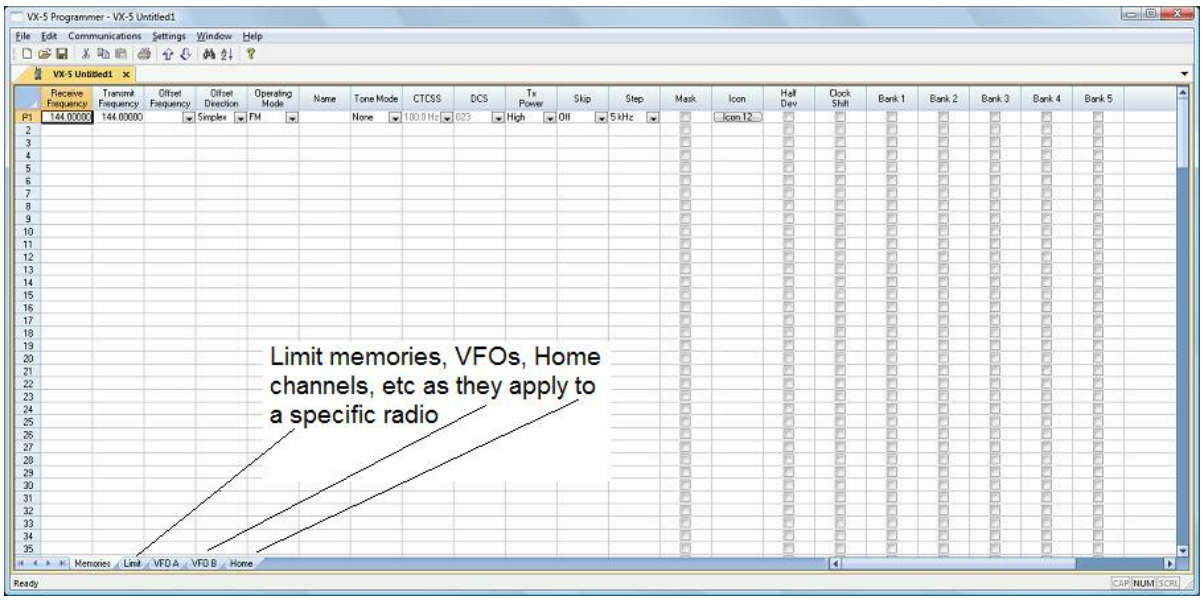
for them.

There is more to this radio than just memory channels. So, there is more to the programmer. Tabs at the bottom of the main screen give you access to Limit memories, Home channels, Hypermemories, VFO, Marine and Shortwave channels, that apply to your radio.



Click a tab. A screen opens with the details that can be entered for these radio functions. You can work with the radio without ever using these tabs. There are default values on these screens that never need to be changed. Make changes for your special activities when you plan to use one of these functions of the radio.

Save the file

Now that you have the frequencies entered into the memory channels, Save the file.

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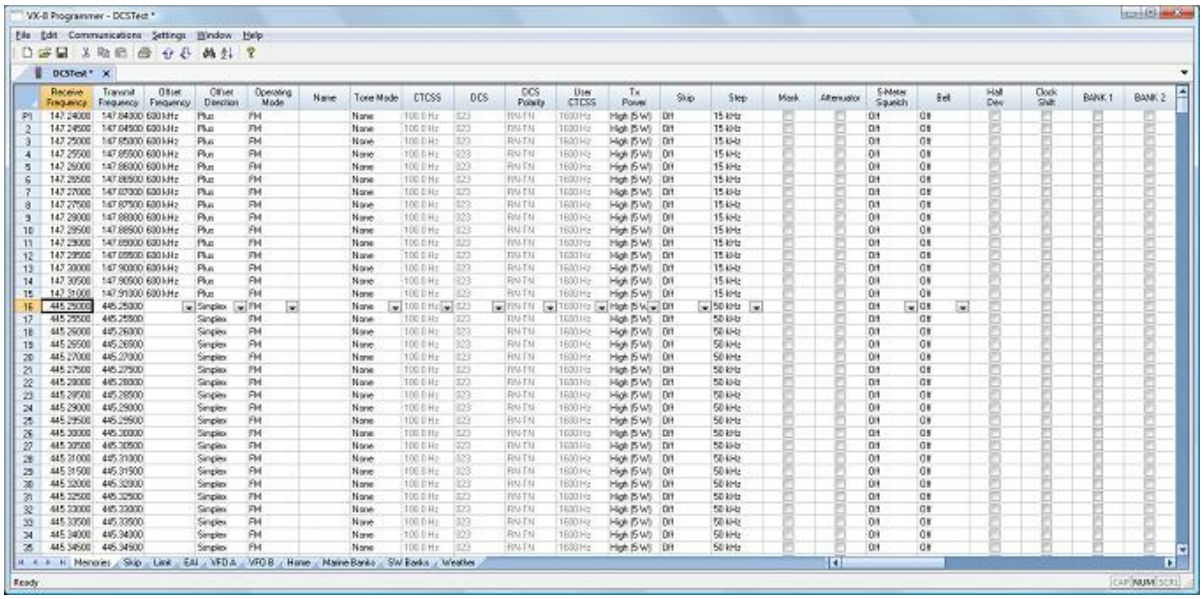
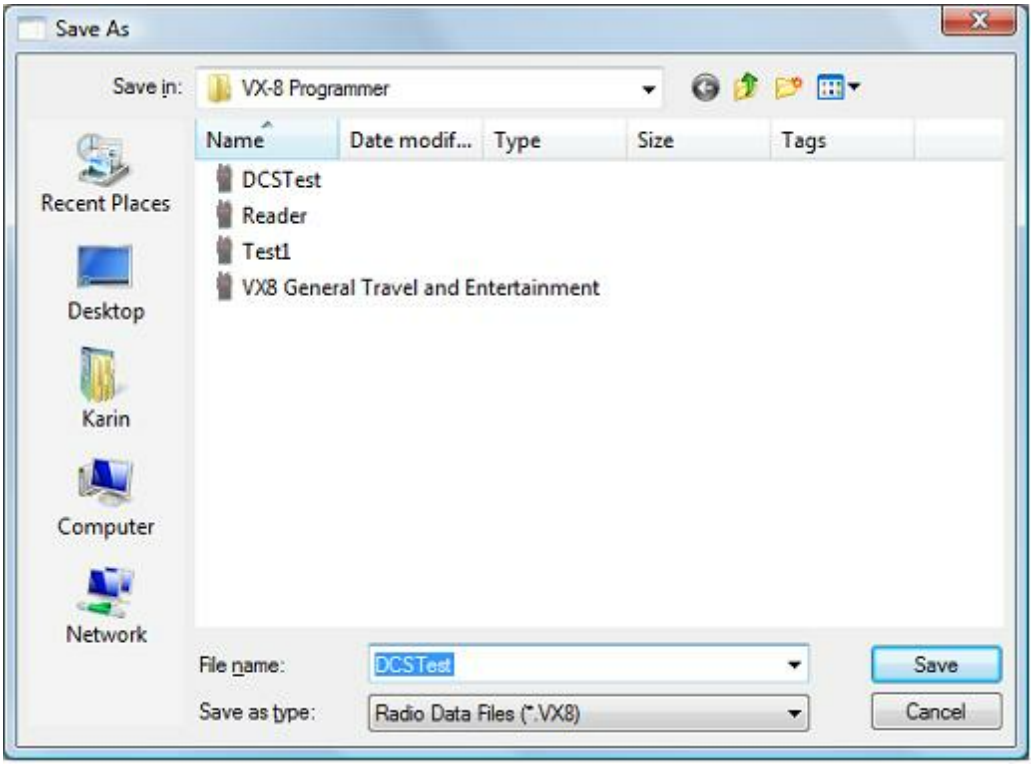


In the menu, click File | Save As



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Enter a filename. You can be as descriptive as you want. 256 characters including spaces, upper and lower letters, and much more to describe this file. The programmer will enter the extension so it can find the file later.

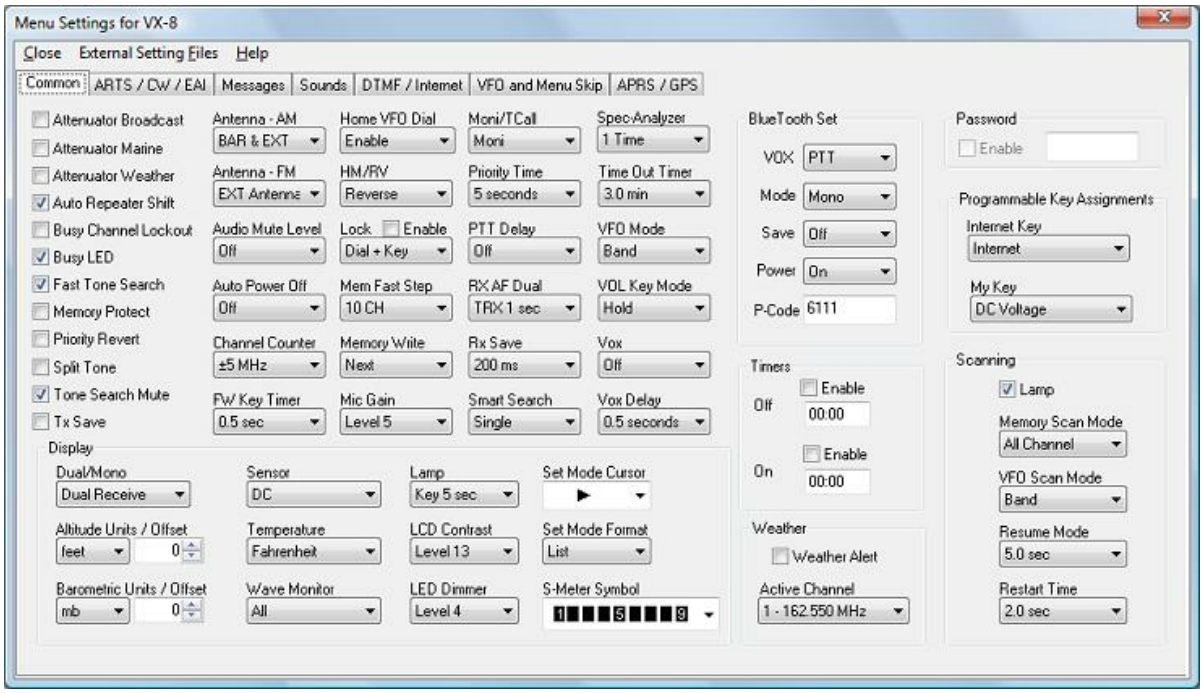
Once you complete this part of the process, the program will open the last file when it starts up.

Even More Radio Functions

Today's radios can do so much. Many of the features are not a part of the details for a memory channel. These other options are set once for the radio to use no matter what channel you're operating on: memory channel, limit memory, VFO or Home channel.

These options may include, but are not limited to, Lock mode, ARTS details, display brightness and color, DTMF memories, scan resume options, and many others.

Select Settings | Radio Menu settings from the menu at the top of the main screen to access these options. The Settings screen opens to a page with check boxes, list boxes and edit fields. A sample Settings screen would look like this.



Set the options as you need them to get the performance you want from your radio. The settings shown for your radio will correspond to your radio's features.

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Once you have the options like you want it, save this file. Yes, this is saved separately from the frequencies in the memory channels.

To save the file, select File | Save from the menu on the Settings page. Enter a name when the window opens. You will not have to set these options again when you start a new file of memory channels.

Once the file is saved, select File | Exit to return to the main screen of the programmer.

Sending the file(s) to the radio (programming the radio)

The new *RT Systems'* Version 4 programmers have no comport setup. Using the *RT Systems'* USB cable, you attach the cable, attach the radio, and get the programming done.

First: Communications | Get data from

Although you really want to put the details of your file into your new radio so you can use it, doing Get data from with this new radio gets the process started and may help prevent problems sending the file to the radio.

This process is REQUIRED if your radio has been modified to transmit outside the ham band.

- From the menu at the top of the main window, select File | New. Open a new file to protect the file that you created.
- Connect the *RT Systems* USB cable to a port on your computer. Wait until the New Hardware Found process completes.
- With the radio off, connect the other end of the cable to the radio.
- From the menu at the top of the main window, select Communications | Get data from.

A screen will open with details about this process specific to your radio.

- Follow these steps carefully until this process is complete.
- Open the file that you created earlier. To open a file select File | Open from the menu at the top. Select your file from those in the list. Or with Version 4, your file may already be open in the other tab.

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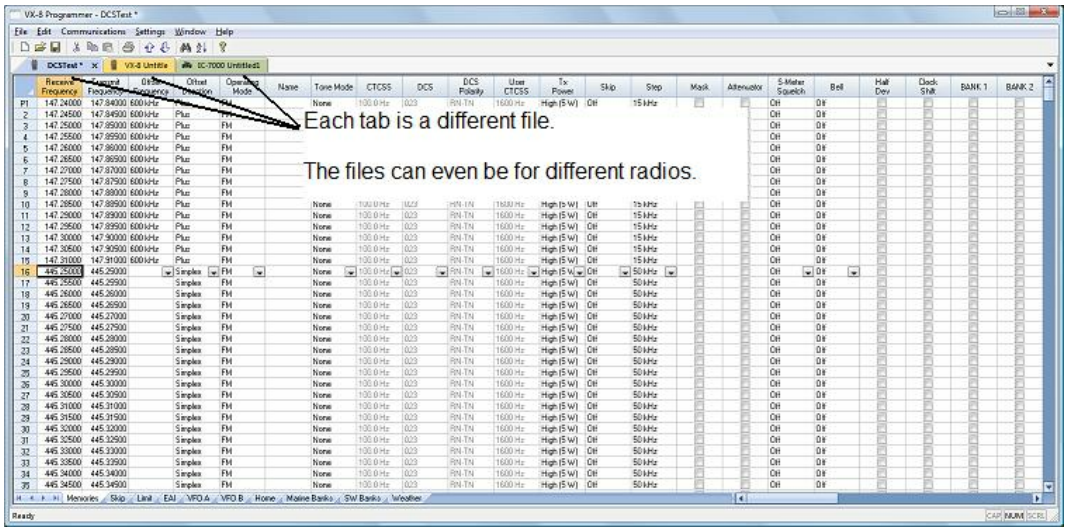

Second: Communications | Send data to

- When your file is ready, select Communications | Send data to from the menu at the top of the main screen.

A screen will open with details about this process specific to the radio.

- Follow the steps carefully to complete this process and program the radio. Read the screen carefully. The steps are often different from those used to get data from the radio.
- Turn off the power. Disconnect the programming cable from the radio.

Your radio may still be in VFO mode after it is programmed. This is a normal mode for the radio. Press the key on the face of the radio as described in the User's Manual for the radio to put the radio into Memory mode and see what you programmed.

Hardware Requirements

Hardware requirements for the Version 4 Programmers include:

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- A PC running Microsoft Windows (XP, Vista or Windows 7). The Version 4 *RT Systems'* software will not work on Windows 98, 2000, ME, or NT.
- Version 4 - An open USB port or the RTS-03 USB to serial adapter to work with an original *RT Systems'* 9-pin serial cable.

Note: The Version 4 programmers will not recognize any other cable or USB adapter. They will not work through a serial port.

- The correct computer interface cable as shown in the ***Radio to Computer Cabling*** section of this help.

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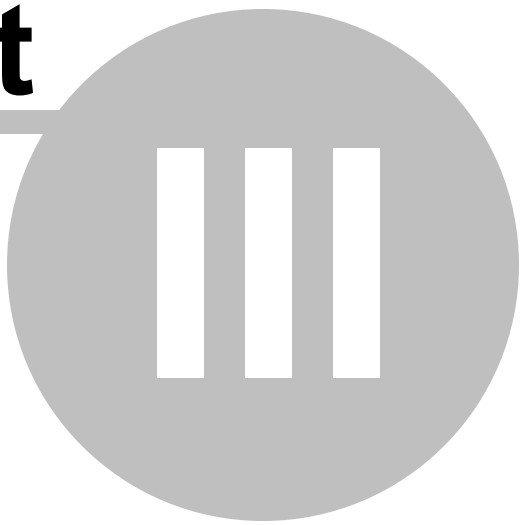
Part



3 Using the Programmer - Overview

The Programmer is designed to be used in conjunction with the manual for the radio. The Programmer provides easy feature configuration while the written manual provides an explanation of a feature and its use.

Working with Programming Files

The radio Programmer has the ability to work on more than one file at a time. These can be files for the same radio or for different radios: even radios from different manufacturers.

You can copy and paste frequencies from one file to another. This added feature makes it even easier to create new files as you take pre-programmed memory information from other files.

The name of the file currently being edited is shown in the title bar at the top of the window. If the file has not yet been named, "Untitled #" appears. The "#" increments when multiple new files are being worked on. ***Note: Untitled #, the default filename, should not be used for permanent file storage. Even if you work in this file, be sure to enter a different filename when you save.*** The file being edited is referred to in this help as the current file.

Creating a New Programming File

Just like in any other editor, there are several ways to create a new cloning file.

- You can open an existing file, save it with a different filename.
- You can use the File | New command as a starting point for a new "blank" file. This file begins with default information for the radio. The "default' information you see in the file is the same as what was in your radio when you bought it new.
- Another way to create a data file is to upload the contents of the radio with the Communications | Get data from menu command. After executing this command, the current file will reflect the memory channels and feature settings of the radio. Changes are easily made to these settings and the new file saved.

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Note: Not all the menu settings of the radio are associated with memory channels. Many are "global" settings that affect the radio during memory or VFO operations. These settings are handled in the fields found on the screen accessed under Settings | Radio Menu Settings.

The global settings will be read from the radio; however, by default, these settings are not saved with the file. Select Settings | Radio Menu Settings to view, change and save these settings. Once saved, these global settings will be sent to the radio every time it is programmed. If they are not saved, default settings will be sent to the radio with the memory programming.

To save these Global settings

- Select Settings | Radio Menu Settings in the menu on the main screen. The Settings screen opens.
- Verify that your settings are as you want them or make changes.
- From the top of this screen, select File | Save. A Save dialog opens into which you enter a filename. Enter the name for this file and click Save.
- Exit the Settings screen by selecting File | Exit.

This settings file is now available for use by any saved file that you send to your radio.

Creating and using multiple Global settings files

There may be global settings of the radio that you want configured differently for different activities. You can make changes to your settings file and save it separately.

To select a settings file for use:

- Select Settings | Radio Menu Settings from the main page of the programmer.
- From the Radio Menu Settings screen, select File | Open. A list of settings files will be presented.
- Select the file you want to use and click Open.
- Verify that this is the settings file that you want to use. Check also that the proper filename appears in the bar at the top of the Menu Settings window.

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- Select File | Exit to close this screen. These settings will be sent to the radio with each memory channel file until you change this file selection again.

Having multiple memory channel files and multiple global setting files gives you the ability to mix and match the features of your radio to suit your needs. This makes it easy to customize the radio for a special event without disturbing the original programming files. Then once the event is over, simply reprogram the radio with the memory channel information and settings that you use everyday.

Tying Global Settings to a Memory Channel File

The Version 3 and Version 4 programmers have the option of saving the global settings with the memory channel information. This new feature is not the default for the programmer; but may be valuable under certain programming circumstances (i.e., programming many radios when you want to be absolutely certain that the settings and the frequencies are properly set for a given activity).

To contrast and compare the two Radio Menu Setting options:

- Use Separate file for menu settings (default)

  This is the default for the programmer.

  This option is based on a "Set and Forget" plan. Once the global settings are configured to your liking and saved, you do not have to repeat this process. This configuration does not change with a new memory channel file.

  The last settings file saved is the one that will be used when a memory file is sent to the radio.

  You can save several different settings files (i.e., one for your radio and a different one for your son’s radio). Then easily match the settings to the radio being programmed without having to make changes in the file repeatedly.

- Keep menu settings and frequencies in a single file. (option)

  This option is set on the Settings | Preferences screen.

  With this option selected, the Radio Menu Settings as assigned on the Settings | Radio Menu Settings screen are assigned ONLY in this file.

  With each new file created the Radio Menu Settings return to factory defaults.

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You have the ability to customize the global settings just as you customize the memory channel file. This would be useful if you are programming each radio uniquely.

No guesswork about what the configuration of the global settings. Once they are set, they stay set in this file until you make a change to them.

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Part

4 Viewing and Changing Programming Files

The Programmer begins in a screen displaying memory channel information for the radio. Default information found in a factory fresh radio is contained in the file. Anywhere this information is displayed it can be changed.

Memory information is easily entered in a spreadsheet style layout. You can view, rearrange, eliminate, or edit these entries. Memory channel 1 must be programmed in most radios. VFOs and Home channels must be programmed. Memory channel 1 and limit memory channels. VFO and Call channels must each contain a frequency appropriate for the band. The programmer checks for missing data when Send data to is executed.

Columns not regularly used are easily hidden with the selections under Settings | Preferences (View | Preferences in earlier versions). Customize your screen for the information you use most often.

Radio Menu Settings

Global menu settings which in earlier programmers occupied the opening screen are now entered on a Settings screen accessed under Settings | Radio Menu Settings (View | Settings in earlier versions). Here options are set for menu settings of the radio that do not change with each memory channel. These settings affect the radio whether it is in memory mode or VFO mode.

The Radio Menu Settings screens contain check boxes for single click settings and easily filled blanks for personalized options. Once configured, these Settings are saved for use by new files. There is no longer a need to reset the options in each new file or to begin a file from an existing one.

Note: Radio Option Settings (including Lock, Beeps, etc) are read from the radio with the Get data from command. Be sure that settings you have customized are saved in the programmer. Access the Settings screen and use File | Save to make the options that were taken from the radio permanent for programming the radio later. Once saved, the settings will be repeated with each new file of memory channel details.

The programmer has two options for these Settings. Multiple Settings files can be created just as multiple frequency files. Then you can "mix and match" as needed to program a radio for a given situation. Alternately, you can opt to save the Settings as part of an individual file.

You can find more details on these two options under Using the Programmer -

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Overview and ***Radio Menu Settings - General Overview*** in this help. Using individual and separate settings files is the default.

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Part V

5 Easy Editing in the Grid

Many new data management commands are available in the programming software from *RT Systems*.

The commands listed here are available through a right click menu or from the list that opens when you select Edit from the menu at the top of the screen. These commands can be used on any of the spreadsheets in the program.

Right Click Menu

Select a row to be edited by clicking on the number to the left of that row. You will notice that the entire row is highlighted (not just the Receive Frequency cell). Release the left mouse button. You will notice that the row remains highlighted until you left click someplace else on the screen of the programmer.

Note: You can select several rows at once (to copy, delete, etc) by clicking on the number to the left of the first of the selection then while holding the left mouse button, drag the mouse across the number of each of the channels to be included. This must be a continuous group.

With the mouse pointing at the highlighted area (anyplace as long as the point of the mouse pointer is within the highlighted area), press the right mouse button. A menu opens with editing options. Release the right mouse button once that menu opens.

Use the mouse to point at the desired command. Left click the mouse to execute that command.

Edit Menu

Select a row to be edited by clicking on the number to the left of that row. You will notice that the entire row is highlighted (not just the Receive Frequency cell). Release the left mouse button. You will notice that the row remains highlighted until you left click someplace else on the screen of the programmer.

Note: You can select several rows at once (to copy, delete, etc) by clicking on the number to the left of the first of the selection then while holding the left mouse button, drag the mouse across the number of each of the channels to be included. This must be a

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continuous group.

Holding neither of the mouse buttons, move the mouse pointer to Edit in the menu at the top of the screen. Press the left mouse button to select this menu option.

Holding neither of the mouse buttons, use the mouse pointer to select one of the editing options shown in the menu. Click the left mouse button to execute this command.

Editing Commands

The examples here will use the programmers for the Yaesu FT-60 (ADMS-1J) and the Icom IC-91 (WCS-91). You will see by the screen shots that you can copy and paste between files: even files for radios from different manufacturers. The programmer will take care of the similarities and differences.

Cut (Ctrl+X) - Removes the selected entry and leaves the memory channel blank. This feature is designed to work for deletion of all the data in a memory channel rather than data in a specific column.

Copy (Ctrl+C) - Copies the selected data.

You can copy two different ways:

Copy ***all the details*** of a Memory Channel (one or several at once) or Copy ***details within one column*** (from one cell to one or many at one time)

- ***In most cases, data can be copied from one tab to another (as in left and right memories).***
- ***It can also be copied from one programmer to another (both files Version 3 or Version 4 or even between Version 3 and Version 4 files).***
- ***Data that is not appropriate for where it is to be pasted (i.e., a VHF frequency into a UHF channel) will not be pasted.***

Copying an entire memory channel or group of channels

Shown here are details for copying within a file. The same actions apply to copy data to another tab of the file or to another programmer.

Open the file.

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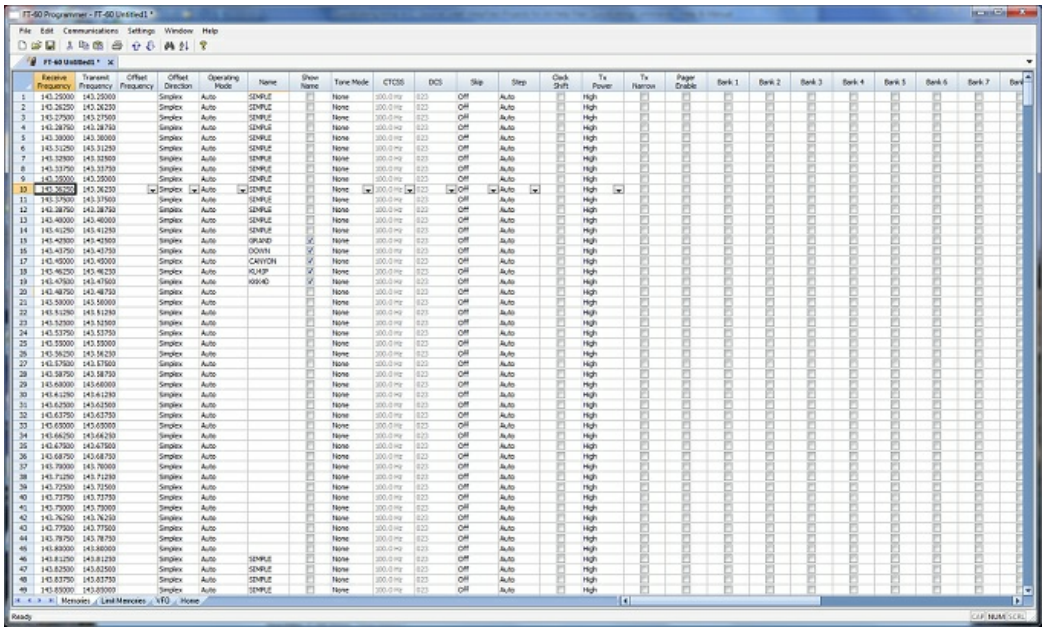

Select the data to be copied.

To select an **entire row**, point your mouse at the *number in the blue box at the left of the row*. Click and release the left mouse to select that row. The entire row will be highlighted when it is selected.

To select **multiple rows**, point your mouse at the number in the blue box at the left of the first row to be selected. Click and hold the left mouse button as you drag the pointer over the next several channels that you want to copy. The channels must be sequential for multi channel copying. All the selected channels will be highlighted.

To select **all rows**, point your mouse at the number in the blue box at the left of the first row. Left click the mouse. Release the mouse. Press Ctrl A to select all. The entire page will be highlighted. ***Note: If you have a lot of channels to select, rather than trying to select them with the mouse, simply select the first one and press Ctrl A. The copy and paste process does not care if blank channels are selected.***

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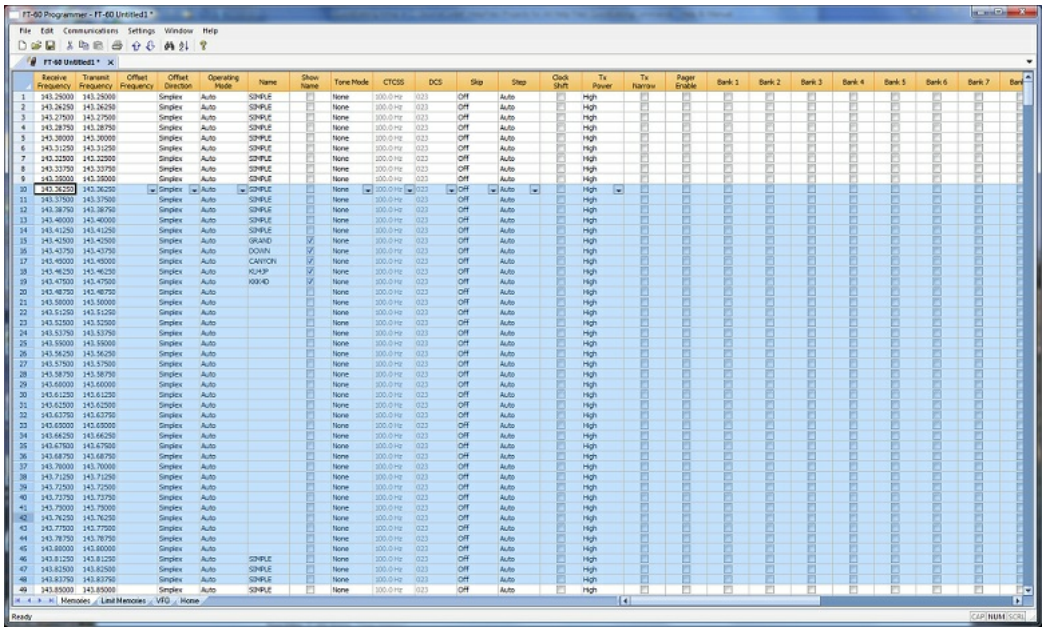

Copy Command

From the menu at the top of the screen, use your mouse to left click on Edit. From the menu that opens, use the mouse to left click on Copy.

You can also copy by pressing Ctrl C on the keyboard.

Or while pointing at the screen of the programmer, right click and select Copy from the menu that opens.

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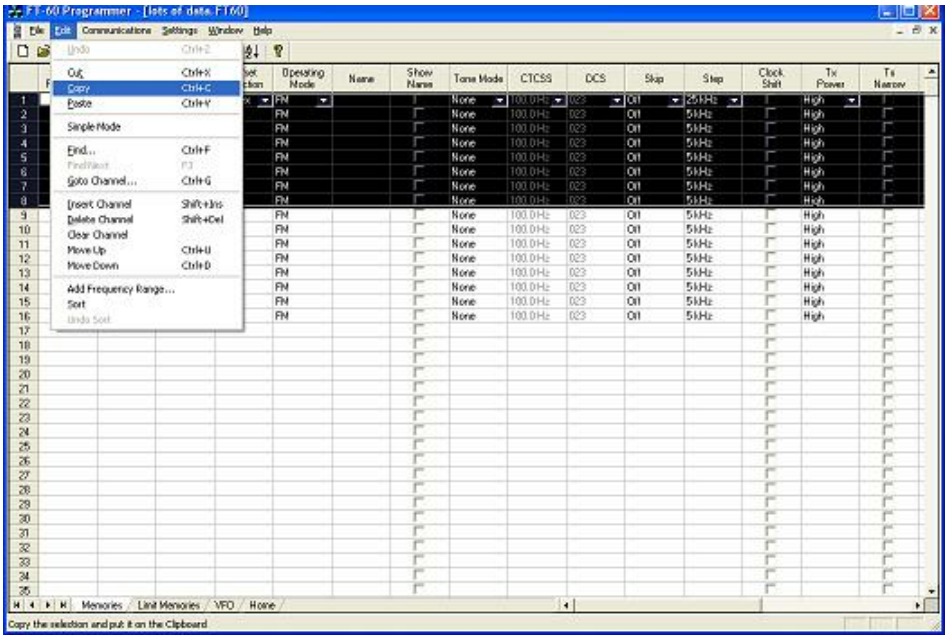

It will appear that nothing has happened. The program in conjunction with built in commands of the operating system of the computer has copied the data. It is waiting for you to Paste it where you want it.

Paste (Ctrl+V) - Writes the selected data to the current position of the cursor overwriting the data from that point.The Version 3 and Version 4 programmers have the ability to copy and paste data in a single column as well as for an entire row.

Paste Complete Channels

Use the mouse to select the channel where you want the data to start. This can be in another file for the same radio or one for any radio for which you use an RT Systems Version 4 programmer.

Select the row that is the **first** into which the data is to be pasted. The Paste process will begin in that location with the first copied channel and continue in each channel after that with the rest of the channels that were copied.

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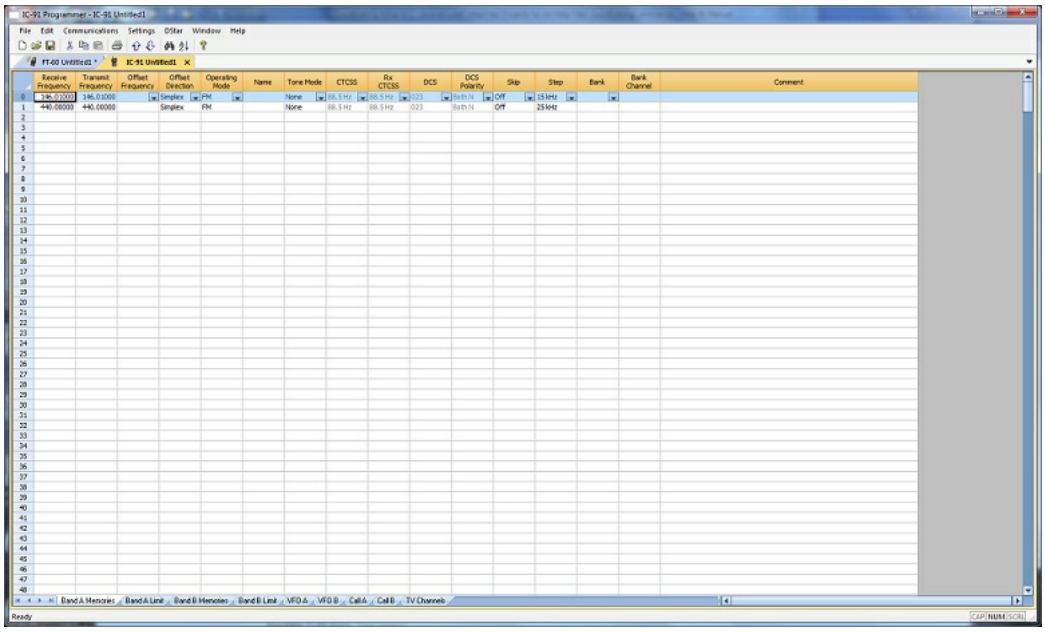

From the menu at the top of the screen, use your mouse to left click on Edit. From the menu that appears, use the mouse to left click on Paste.

You can also paste by pressing Ctrl V with the mouse pointing within the selected area (i.e., just look at where the mouse pointer is on the screen. It must by within the black area on the screen of the programmer for this keystroke to have any effect.).

Or while pointing within the highlighted area, right click and select Paste from the menu that opens.

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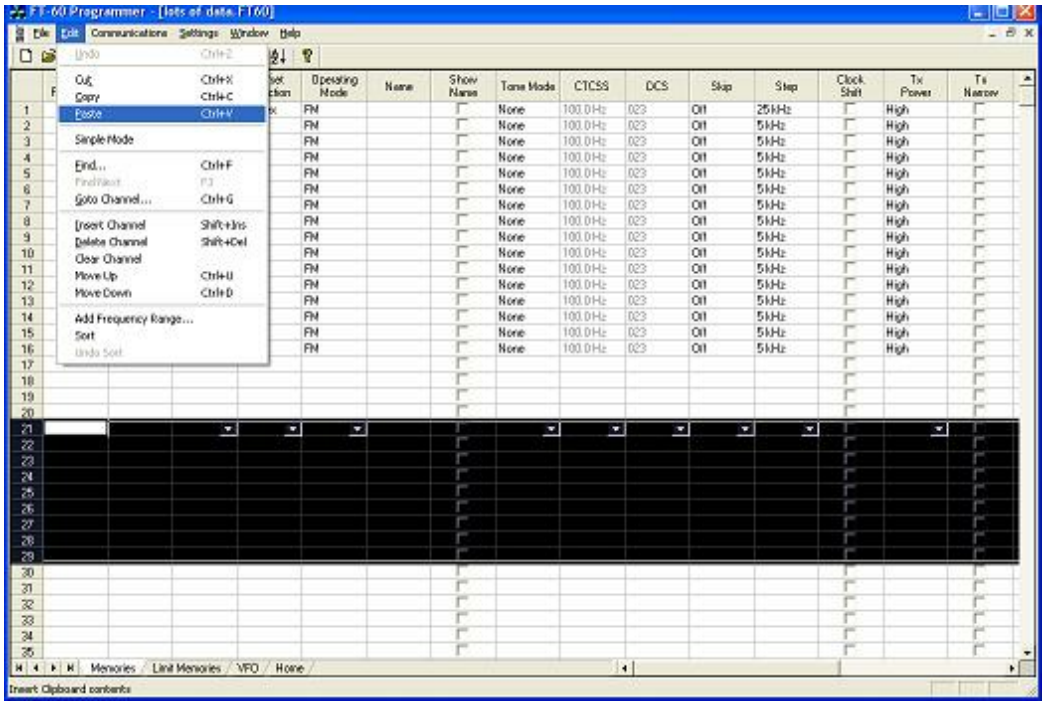

The information is pasted into the selected channels.

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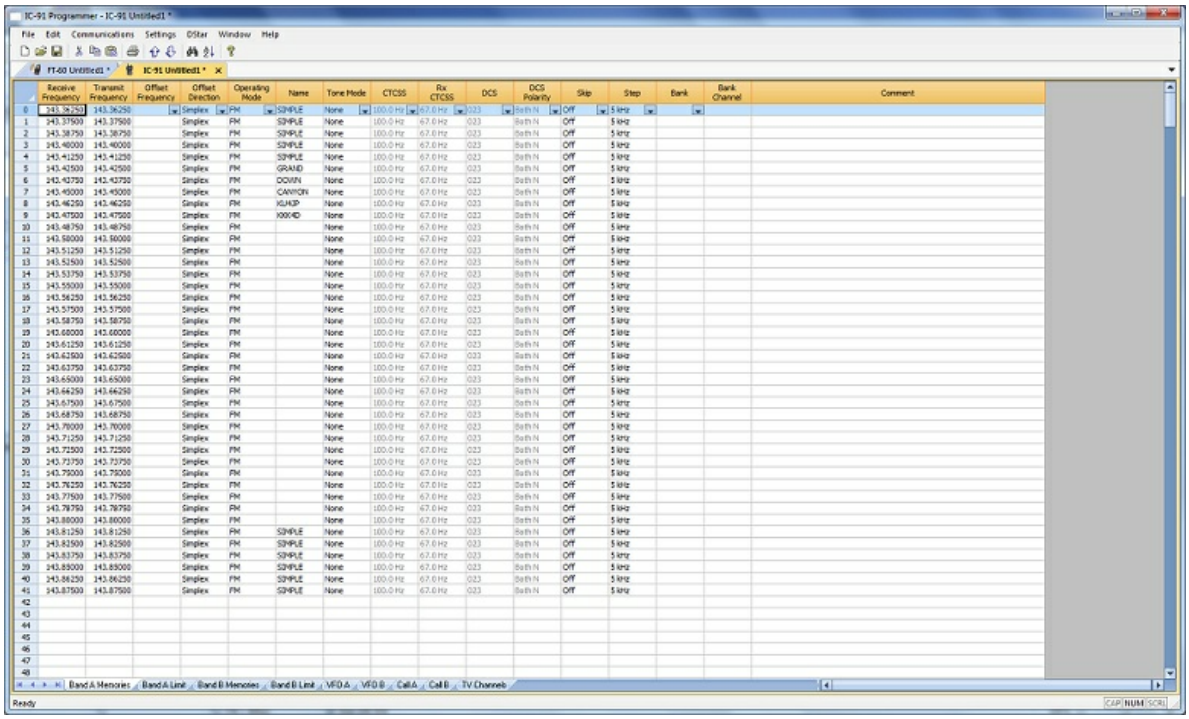

You can make this process even easier by splitting the screen into two parts. Select Window New Vertical Tab Group for this result.

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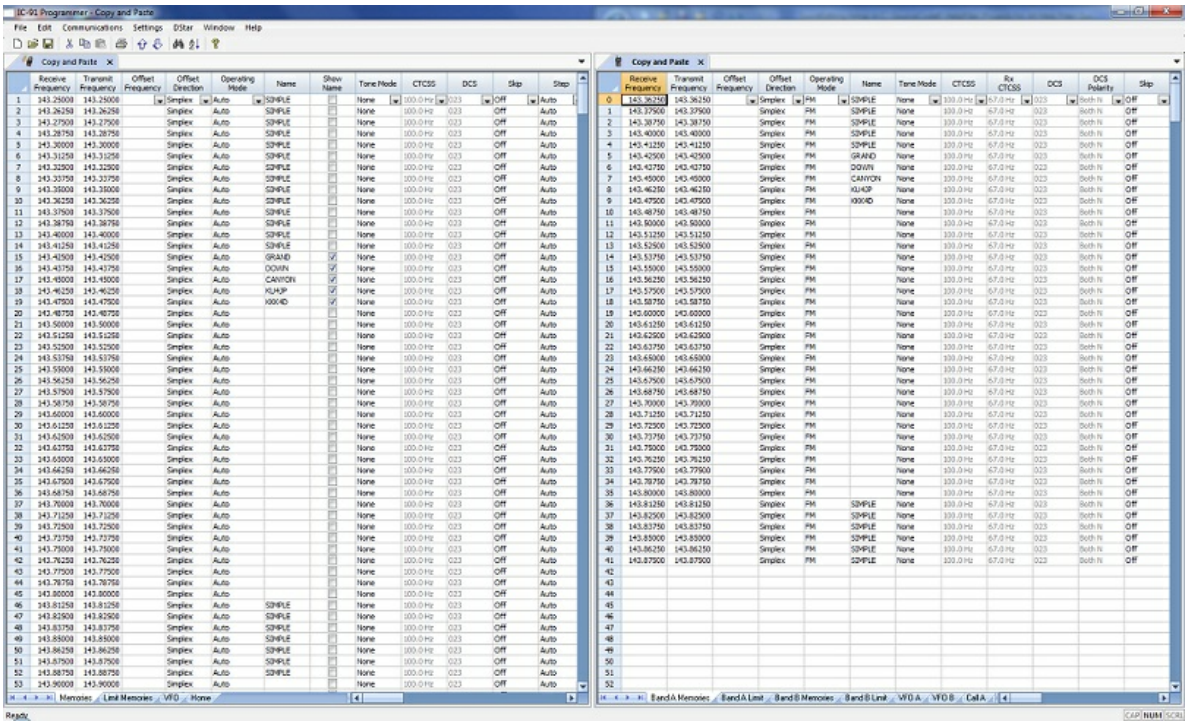

Copying details from one cell to change many rows at once.

- **Column editing:** This editing allows you to change the data in the same column of several rows at once. It works a little differently for columns with text (including those into which you enter text and those that you select text from a list) and check box fields. Each of these scenarios is presented here in an example.

  Text Cell Editing - To change Tone Mode to Tone for several channels.

  Select the Tone Mode field of the first of the channels to be changed.

  Make the change by pulling the drop-down and selecting Tone from the list.

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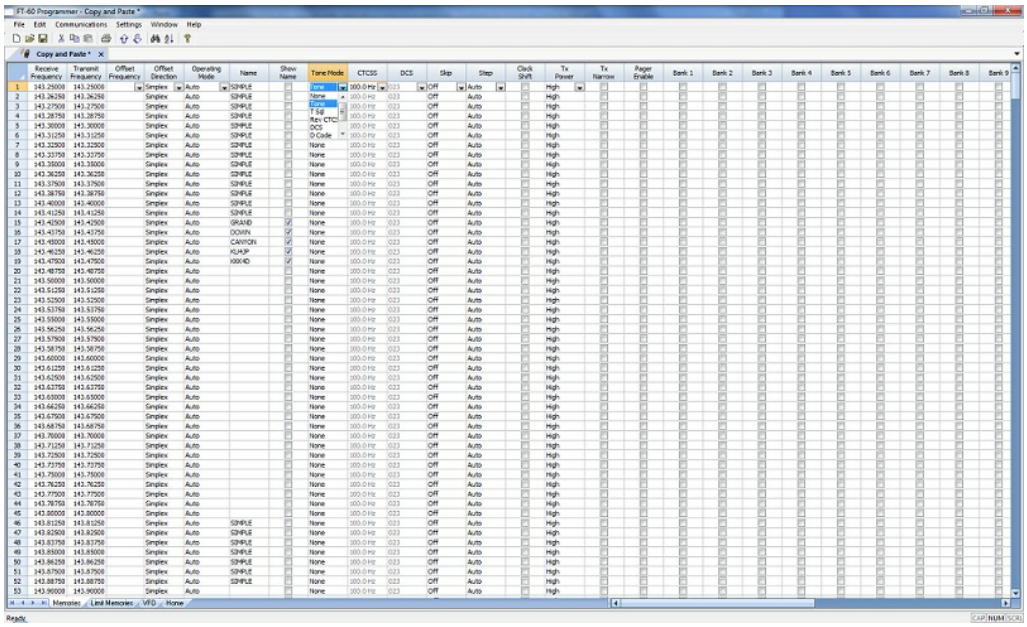

Once the selection is made, the focus will move to the next field. Click back into the Tone Mode field that displays the correct value. When you move back into the field you can copy the information if the field is highlighted with a ring around its border or if the text within is shaded (indicating that it is selected).

Press Ctrl + C, select Edit | Copy from the menu at the top of the screen, or right click and select Copy from the menu that appears. (Just as with row copying in the first example.)

Select the first cell to be changed by pressing Down arrow until that cell is highlighted (the cell will be in the same column so using the Down Arrow key will easily move you to another nearby cell). If you need to move quite a way in the file, move to the first cell to be changed and click the mouse to select that cell.

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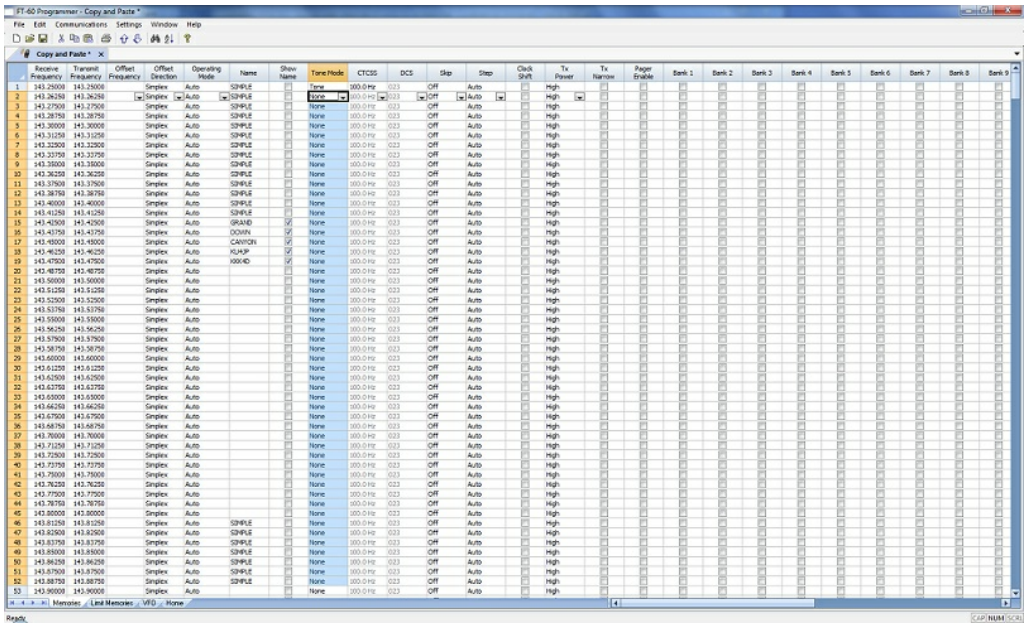
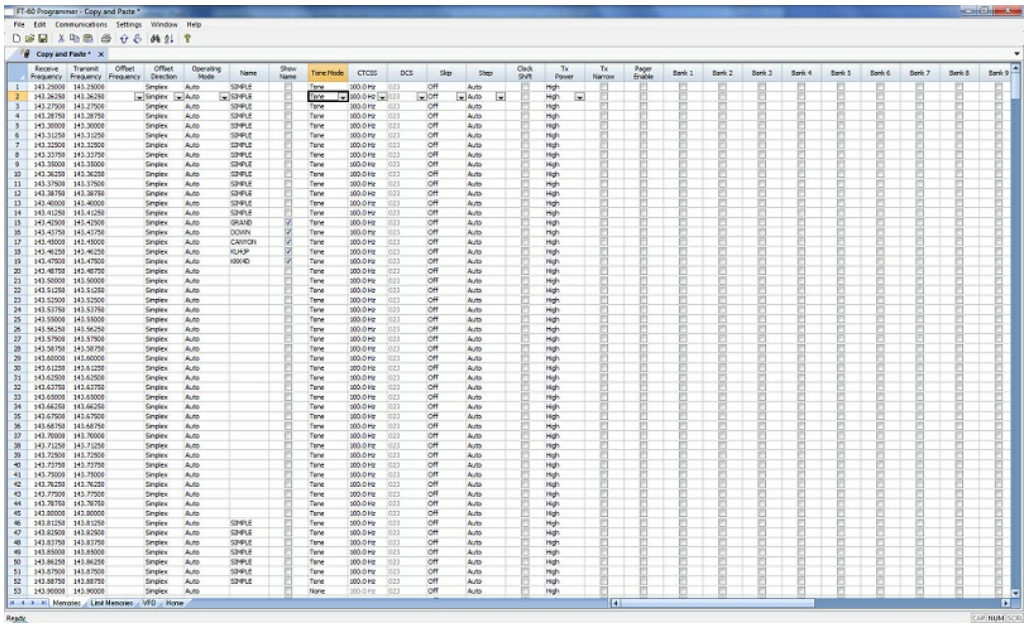


If several consecutive rows are to be changed, select them all by holding the Shift Key while you Down Arrow through them or hold the Left Mouse Key while you move your mouse over them (normal Windows selection processes). When they are selected, they will be highlighted in a color based on the scheme of your computer.

Press Ctrl + V, select Edit | Paste from the menu at the top of the screen, or Right Click and select Paste from the options in the menu that opens. The copied value will appear in each of the fields.



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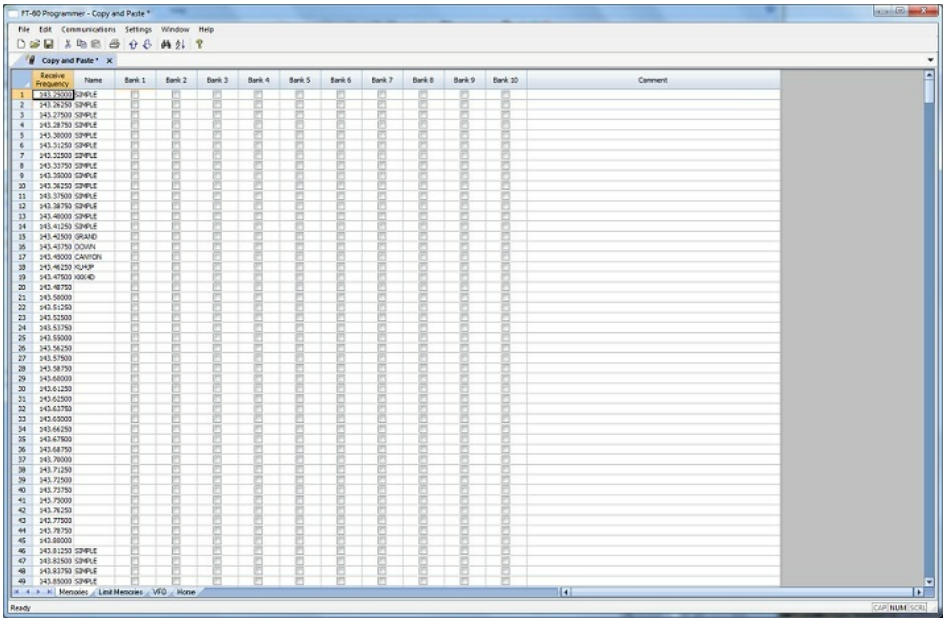
Column editing will address a selection of consecutive cells all at once or individual cells repeatedly. If the items to be changed are not consecutive, you can select and paste repeatedly until all the cells are addresses. You do not have to copy again. The programmer retains the copied value.

Check Box Cell Editing - If you want to put several channels into a Bank, there is no reason to do this one row at a time.

This process varies from the other by how the cells are selected. Check box cells act differently than those that contain text. You can copy from one check box column into another.

In this example, put channels several into Bank 1 without checking the Bank 1 box for each channel.

First, select Settings from the menu at the top of the page. From that menu, select Bank Settings. Several columns of the screen will be hidden leaving only Receive Frequency, Name and Banks. This makes working on the screen easier since you no longer must scroll through several columns that you are not using now.



For Channel 1, put a check in the box under Bank 1.

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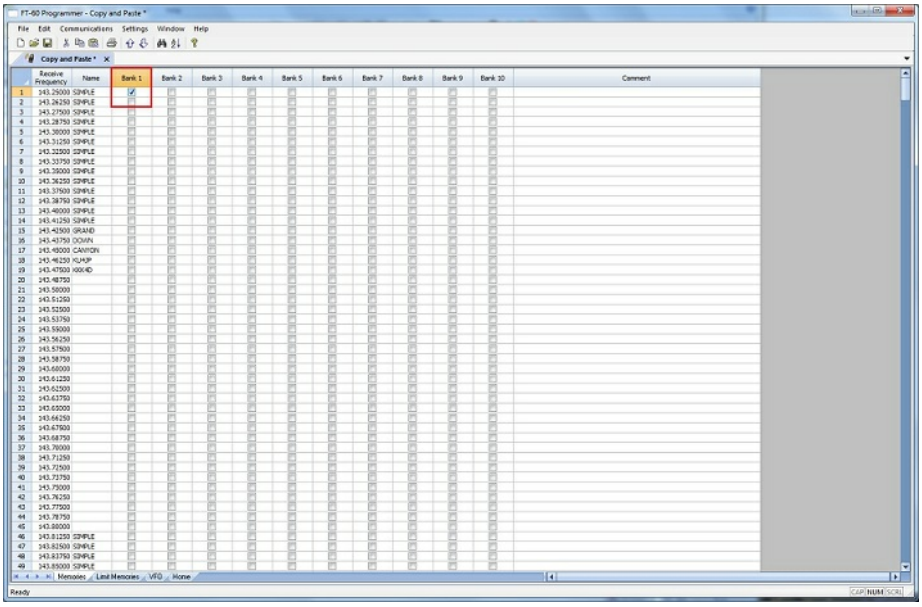

At this point you CANNOT copy this field. Press Tab or Enter to move out of the field.

The process is more easily done now with the keyboard rather than the mouse.

Press Right Arrow to move focus back into the Bank 1 column. Notice that there is now a black border on that cell. The cell is now ready to be copied. Press Ctrl C or select Edit from the menu then copy from the list that opens to copy the cell.

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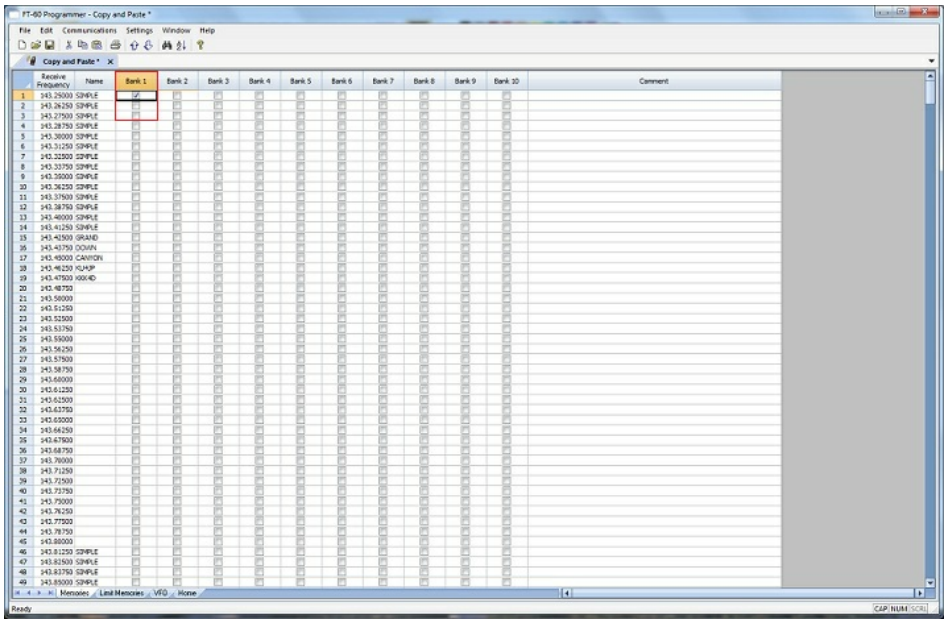
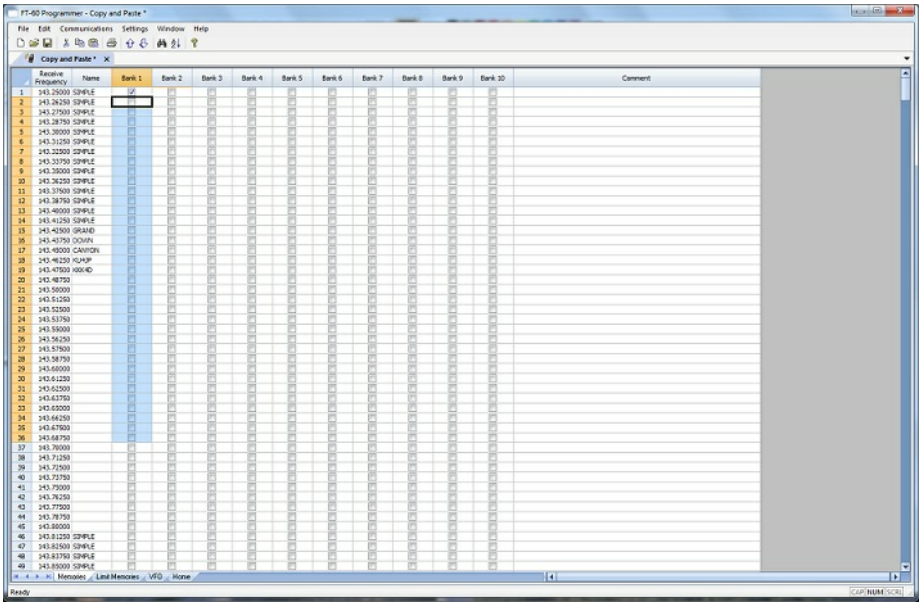


Press and Hold the Shift key while pressing the Down Arrow key to select the rows that will be set with this information.



Press Ctrl V to paste the selecting into the fields.

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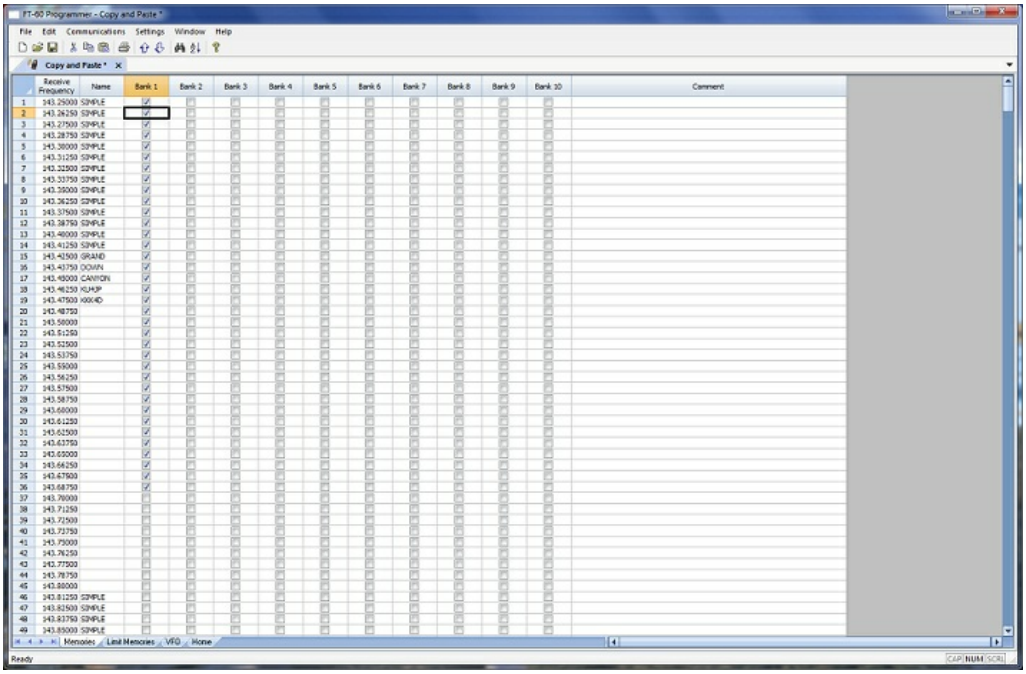

Simple Mode: Hides several of the columns for each memory channel. Those remaining are the ones that are most needed for any memory channel. Those remaining include:

Receive Frequency - A channel cannot be programmed without a receive frequency. This is the frequency you listen to.

Transmit Frequency - The programmer will complete this automatically. The column is included in case you need to enter the value other than the default for the receive frequency based on the band plan (i.e., an odd split pair).

Offset Direction - Again, the programmer will complete this automatically based on the band plan for the receive frequency. However, an occasional repeater will differ from the band plan. Including this column gives you the ability to address that difference.

Name - This column is for personalized information to identify the channel.

Tone Mode - The repeater operator controls this detail for the repeater. There is nothing standard that can be completed automatically. You need

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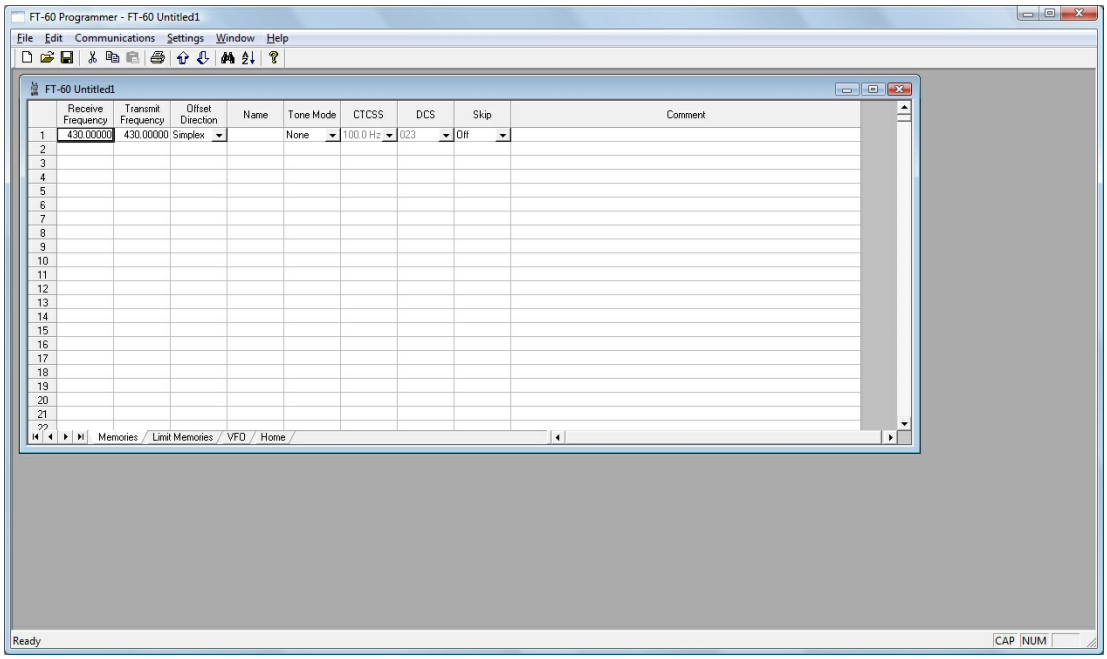
to select the Tone Mode then assign the CTCSS frequency or DCS code as needed for a particular repeater.

Skip - Use at your discretion to include or exclude a frequency during memory channel scanning.

Comment - Personalized notes up to 80 characters. This information remains a part of the file and is not transferred to the radio.



Note: While in Simple Mode, you cannot access the Preferences screen (Settings | Preferences). The columns that are hidden in Simple mode are predetermined by the programmer.

All columns are visible on the screen when you are no longer in Simple Mode. If you want to hide other columns, you can do that through individual selection on the Settings | Preferences page.

Find (Ctrl+F) - Finds specific text in a specified column. Once you select this command or press Ctrl+F a screen opens into which you enter the text (or number) to be found.

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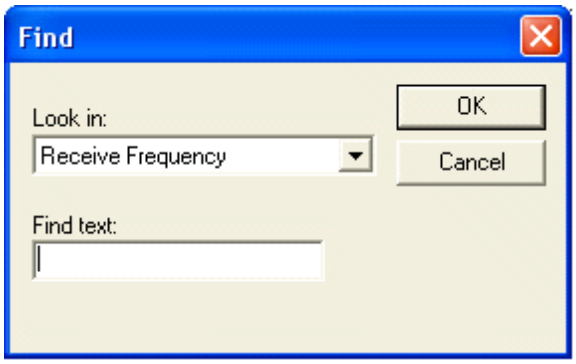


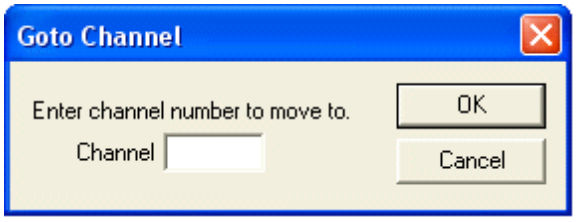
Select the field to be searched (i.e., Receive frequency, Transmit frequency, etc.)

Enter the text (or numbers) to be found.

Click OK to move to the first item found. The search always begins at the top of the list and stops at the end.

Find Next (F3) - Use the F3 function key to repeat the specified find and move to the next item. For example: You choose to search for 145 in the Receive Frequency column in a file with 5 channels beginning with 145. OK in the Find box takes you to the first one. F3 takes you to the second; then the third; then the fourth: and so on until you have stopped at each of those that match the criteria.

Goto Channel (Ctrl+G) - Moves to the indicated channel number. When this option is selected a screen opens into which you enter the channel number. Enter the number and click OK to move to that memory channel (programmed or not).



Insert Channel (Shift+Ins) - Inserts a blank row without deleting information present. The current information and all that follows is "pushed-down" to make room. The number of rows inserted will equal the number of rows selected. This is a great way to slip channel information into a list of channels.

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Note: Insertion of rows can result in the loss of data from the bottom of the list. You will be warned if there is danger of data loss and given the opportunity to cancel the process to prevent this loss.

Delete Channel (Shift+Del) - Removes the selected row. All the data following the deleted row is "pulled-up" to eliminate the blank row. Beware!! Deleted data cannot be recovered. Neither the Insert nor the Paste commands write the data to the grid. If you accidentally delete data, exit the Programmer WITHOUT saving. The file will be restored to its condition when you last saved and the last deleted data will be restored. Multiple channels can be deleted by selecting them all at once and selecting delete.

Clear Channel - Removes the data from the selected channel without moving all those that follow up to fill this space. Leaves the channel blank.

Move Up (Ctrl+U) - The ability to select a channel and have it "change places" with the channel immediately preceding it. Repeat this command on a selected channel to "walk" it into place in your list. Sequential channels can be selected and moved at once. The group will move up one channel at a time. The displaced memory channel will move to the end of the group being moved.

Move Down (Ctrl+D) - The ability to select a channel and have it "change places" with the channel immediately following it. Repeat this command on a selected channel to "walk" it into place in your list. Sequential channels can be selected and moved at once. The group will move down one channel at a time. The displaced memory channel will move to the top of the group being moved.

Add Frequency Range - A convenient way to add lots of channels at once. This is great for setting up a radio for scanning a certain range of channels. When this option is selected you are presented with a window into which you enter the details of the channels to be entered.

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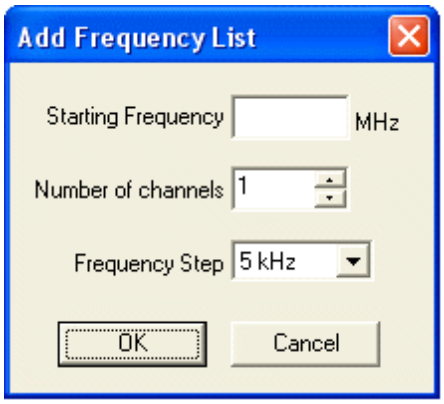

Enter Starting Frequency: The value of the first frequency of the list to be entered. Any allowable frequency of the radio being programmed.

Number of channels - Enter the number of channels to be entered. You can insert as few as 1 to as many as 1000 channels at once. You are not warned if you select more than the number of memory channels. The process just inserts all that it can and ignores the rest.

Frequency Step - Enter the value that will separate each of the frequencies in these channels. Select 5kHz to 200 kHz.

Click OK and watch the screen fill. Or Cancel to exit the process without change to your file.

The channels are inserted beginning at the currently selected channel (i.e., if you have selected channel 40, the first channel will be added at channel 40).

You are warned if a channel will be overwritten and given the ability to not overwrite or to cancel the process. If you choose No to prevent loss of the current channel information, the skipped frequency is entered into the next available space and not lost.

Sort - Great for data management or to arrange your channels permanently for a special use. The version 3 and Version 4 programmers have the ability to Undo a sort. You can now sort the list on a given parameter, touch-up a group of entries, then put the list back in its original order with the changes that you made. When this option is selected you are presented with a window for selection of the options.

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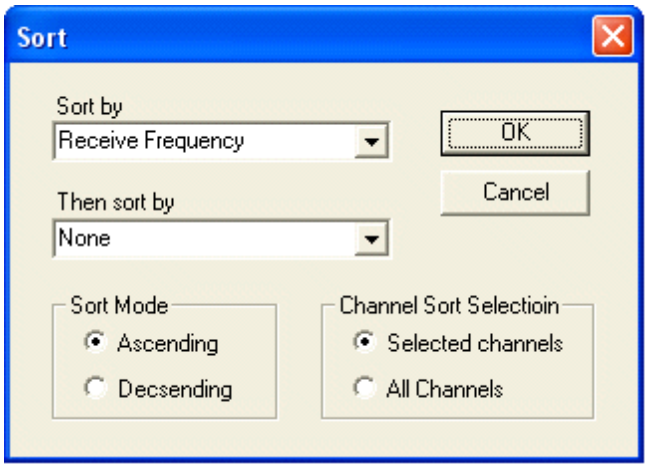

Sort by - Select a column for the initial sort.

Then Sort By - Select a second column for a secondary sort.

Sort Mode - Ascending for lowest to highest. Descending for highest to lowest.

Channel Sort Selection - Selected Channels to sort only a group form the file. All Channels to sort all the channels in the file.

If the result is not quite what you expected, select the Undo Sort option to return the list to the point you left it last.

Always save your file before you sort. At the very worst you can exit the file without saving to return to the order of that last save.

Blank memory channels are always sorted to the top of bottom of the list based on the Ascending or Descending selection.

Different fields sort differently. If a field is a text field in one programmer and a drop down list in another, the sort results will be different. It has to do with how the computer interprets the values in these different types of fields. While this was present in the older programmers, it should not be a problem in the Version 3 or Version 4 programmers where the fields are consistent between the radio programmers.

Unsort - For use after sorting to return the list to the last saved order. Use Sort and Unsort to easily edit channels with the same info that needs to be changed. Sort to bring those channels together. Edit the details (see cell editing). Then unsort to return the list to the last saved order with the edits in place.

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Quick File Access Commands

Ctrl 0 (Control zero) - Open existing file for same radio. Calls the Open dialog for the programmer being used allowing you to select a file to be opened without having to select the file type first. This is especially helpful when several programmers are loaded on one system. (i.e., Lets you select another FT-7800 file without having to select that file type first from the open box.)

Ctrl O (Control letter "O") - File | Open. Presents the box from which the file type is selected just as File | Open. Select the type of file to be opened. The programmer will look in the location of that last file for that particular file type. (i.e., you can open an FT-60 file while working with the FT-7800 programmer as long as you have the Version 3 or Version 4 module for the FT-60. With both open, you can copy and paste between the files or send each to the proper radio without having to close and reopen the Version 3 or Version 4 programmers separately.)

Ctrl M - Automatically create a new file for the programmer being used. Eliminates having to select the file type first.

Ctrl N - File | New. Presents the box from which the file type is selected just as in File | New in the menu. Select the file type for the programmer to create a new file for that radio (the same as the one you're working with now or for a different radio for which you have the Version 3 or Version 4 module.)

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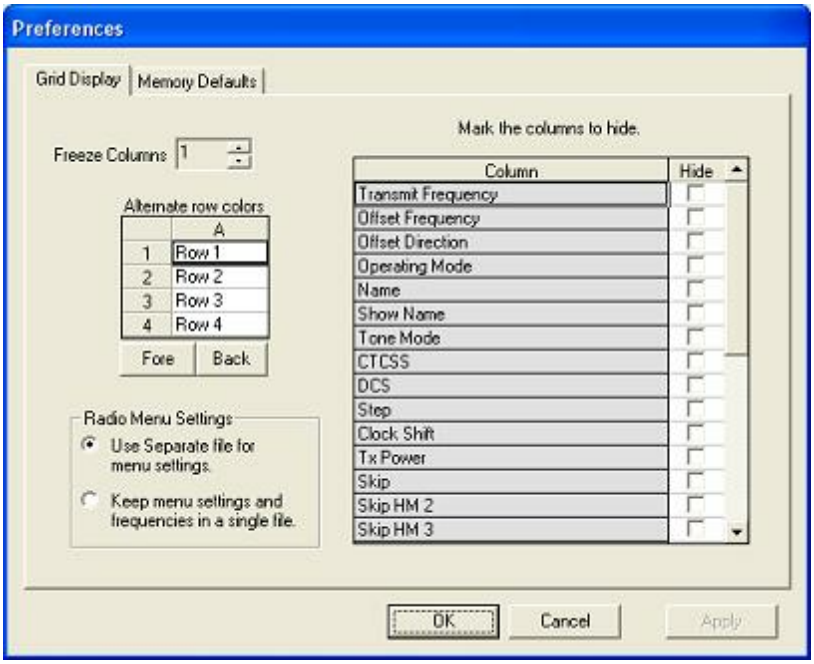
Part VI

6 Screen Appearance and Default Options

The screen of the programmer can be customized to make data entry that much easier. Options for screen appearance are accessed under Settings | Preferences from the menu on the main screen of the programmer. This screen appears when that option is selected:



Freeze Columns

The option to "freeze" can be applied to any or all columns. Select the number of columns to remain on the screen at all times as you scroll to the right of the spreadsheet.

Having these columns always available for reference can be a great help for identifying the memory channel being edited.

Hidden Columns (Mark the columns to hide)

Selected columns can be marked as hidden which removes them from the screen display. During editing, these fields are completed with default

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information for the radio. This option is a global setting and will affect every file, new or existing.

In an existing file the data in these columns is not lost: it is simply not displayed.

In a new file, a hidden column is filled with a default value.

Hidden column data is not printed. Columns can be marked as hidden to customize printed output and then restored for additional data management.

Note: Several columns are hidden and unhidden with the Simple Mode option found under Edit from the menu of the main screen. Simple mode hides all but the columns required for memory channel operations. When you leave Simple Mode, all columns will again be visible.

Alternate row colors

Select a color for the text (Fore) and/or background (Back) for rows 2, 4, 6, etc. This can help the readability of the spreadsheet.

Radio Menu Settings

Sets the option for how the global settings of the radio are saved in the file. These options for saving are explained in great detail in the Using the Programmer - Overview section of this help.

Briefly, the radio settings contained on the Settings screen are options that are not specific to any one memory channel. The radio uses this setting whether it is in memory mode, VFO, on a Home channel, or, basically, whenever it is on. The settings for these options are sent automatically to the radio with the channel information.

The Settings can be saved as part of the channel data file or in a separate file.

As part of the channel data file, they are reset to defaults each time you start a new file. You set them to your specifications for the file that is being created.

As a separate file, they are set once, saved, then sent to the radio with every saved channel data file.

The pros and cons of both of these option are discussed in detail in the Using the Programmer - Overview section of this help.

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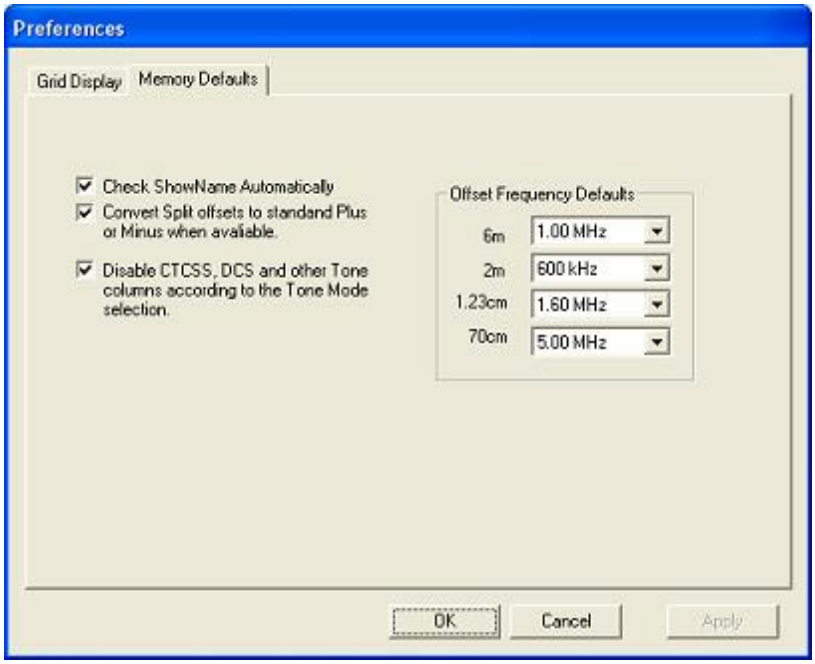
Memory Defaults

You have complete control of the programmer. These options control default values for the channel data for memory channels, VFOs, Limits, Home, etc. Making one change here controls how a channel will be completed when a frequency is entered.

To access the Memory Defaults screen,

- Select Settings from the menu at the top of the screen.
- Select Preferences
- Once on the Preferences screen select the Memory Defaults tab.



Check Show Name Automatically - For radios with an extra column for show name, having this option selected (checked) lets the programmer mark that check automatically when you enter a name for that memory channel. this eliminates that extra step.

With this option checked, you can uncheck a Show Name box at any time if you would rather display the frequency for a given memory channel.

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Convert Split Offsets to standard Plus and Minus when available - This option is for programming Yaesu radios only as Icom radios work only with Plus (+Dup) and Minus (-Dup) offsets. See the discussion of Non-standard offsets in the Programmer Main Window section of this help for a complete explanation.

Disable CTCSS, DCS and other Tone columns according to the Tone Mode selection - Beginning in the Version 3 programmer and continuing into future versions, the programmers have been designed to help you enter information for tones used for repeater access. You cannot enter a tone unless you have selected a Tone Mode which tells the radio to use that tone. The tone value columns are disabled until you turn the tone on. Then only the appropriate column is made active. When this option in unchecked, you will be able to adjust the tone value even if the Tone Mode has not been set for that memory channel.

Offset Frequency Defaults - Defaults are set for US radios. Others are presented to make data entry easier in other countries where those defaults are different.

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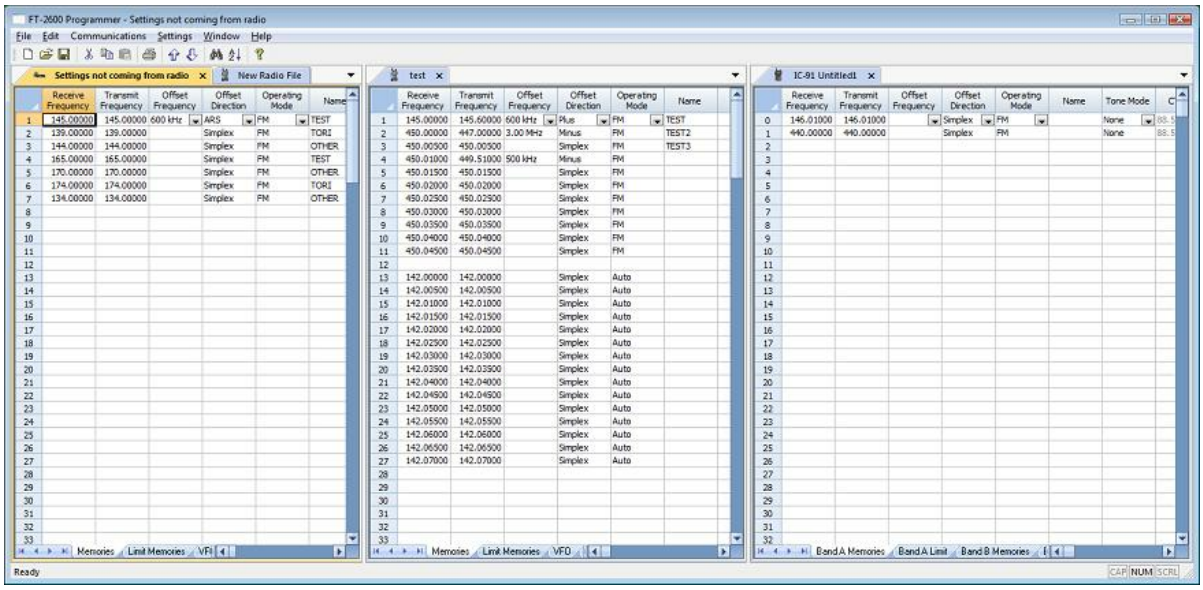
Part VII

7 Split Screen for Multiple Files

The Version 4 programmer can display more than one file simultaneously in the programmer's main window. Opening several files at once makes it even easier to copy and paste between them (even files for different radios from different manufacturers) or just to compare the frequency lists.



Open the files

From the menu at the top of the main screen, select Window | New Vertical tab group

The screen will separate into two parts taking the selected file to the new group.

To work with three as shown above, simple select another file and repeat the process.

A horizontal split is also possible.

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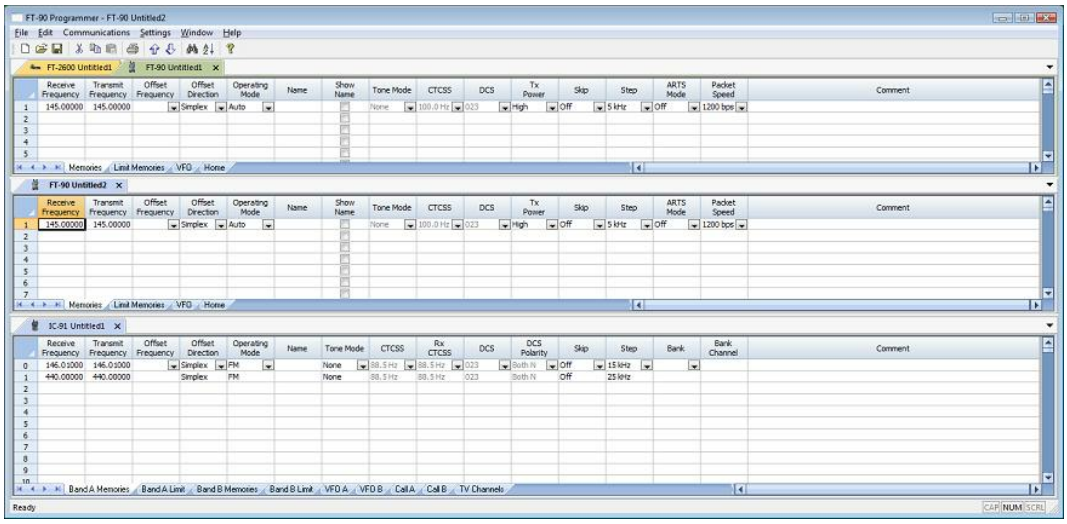

Open the files

From the menu at the top of the main screen, select Window | New Horizontal tab group

The screen will separate into two parts taking the selected file to the new group.

To work with three as shown above, simple select another file and repeat the process.

Note: Once you divide the screen horizontally or vertically, the other separation is not available. Selections for vertical and horizontal groups will be enabled and disabled in the menu as necessary.

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Part

8 Menu Item Cross Reference

The programmer presents all the options for the radio in easy to use grid, check box, list and combo box formats. Most radios these days have so many options that organizing them in the programmer can be a challenging task.

Presented here is a cross reference list that details the item as presented in the manual with where you will find the setting for that item in the programmer.

The location in the programmer is described as a "path". For example.

Settings | Radio Menu Settings | Common tab | Antenna - AM

- Click on Settings at the top of the screen
- Select Radio Menu Settings from the menu that opens
- Select the Common tab
- The option is named Antenna - AM on the Common tab.

Set Mode		
Menu Item		Programmer Item
1	APO	Settings | Radio Menu Settings | Common tab | Auto Power Off
2	AR BEP	Settings | Radio Menu Settings | Common tab | ARTS Mode
3	AR INT	Settings | Radio Menu Settings | Common tab | ARTS Interval
4	ARS	Main Screen | Hypermemory 1-5 | Auto Repeater Shift (checkbox)
5	BEEP	Settings | Radio Menu Settings | Common tab
6	CLK SFT	Main Screen | Clock Shift - This item is set independently for each memory channel.
7	CWID	Settings | Radio Menu Settings | Common tab | ARTS CW ID (check box).
8	CW WRT	Settings | Radio Menu Settings | Common tab | ARTS CW ID (edit box).
9	DCS COD	Main Screen | DCS Code. This item is set independently for each memory channel. This item can be set only after Tone Mode has been set to a selection that uses a DCS code.
10	DCS N/R	Settings | Radio Menu Settings | Common tab | DCS Polarity
11	DIMMER	Settings | Radio Menu Settings | Common Tab | Dimmer

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12	DT DLY	Settings | Radio Menu Settings | DTMF Pager Codes | Delay
13	DT SPD	Settings | Radio Menu Settings | DTMF Pager Codes | Speed
14	DT WRT	Settings | Radio Menu Settings | DTMF Pager Codes | DTMF (edit fields)
15	EDG BEP	Settings | Radio Menu Settings | Common tab | Band Edge Beep (checkbox)
16	HM/REV	Settings | Radio Menu Settings | Common tab | Programmable Buttons | TONE - V/M
17	HYPER	Settings | Radio Menu Settings | Common Tab | HyperWrite
18	I NET	Settings | Radio Menu Settings | Common tab | Internet | Mode
19	INT CD	Settings | Radio Menu Settings | Common tab | Internet | DTMF Digit
20	INT MR	Settings | Radio Menu Settings | Common tab | Internet | DTMF Memory
21	LOCK	Settings | Radio Menu Settings | Common tab | Lock
22	MIC	Settings | Radio Menu Settings | Common tab | Microphone
23	NAME	Main Screen | Show Name. This item is set independently for each memory channel.
24	NM WRT	Main Screen | Name This item is set independently for each memory channel.
25	PKT MIC	Main Screen | Hypermemory 1-5 | Packet Mic. This item is set separately for each Hypermemory.
26	PKT SPD	Main Screen | Hypermemory 1-5 | Packet Speed. This item is set separately for each Hypermemory.
27	PRG PNL	Settings | Radio Menu Settings | Common tab | Programmable Buttons | Prg Panel [Low(ACC)]
28 - 31	PRG P1-P4	Settings | Radio Menu Settings | Common tab | Programmable Buttons | P1 - P4
32	RF SQL	Settings | Radio Menu Settings | Common tab | RF Squelch
33	RPT MOD	Main Screen | Offset Direction. This item is set independently for each memory channel.
34	PRI REV	Settings | Radio Menu Settings | Common tab | Priority Revert (check box)
35	RX MOD	Main screen | Operating Mode. This item is set independently for each memory channel.
36	S SRCH	Settings | Radio Menu Settings | Common tab | Smart Search
37	SCAN	Settings | Radio Menu Settings | Common tab | Scan Resume
38	SCN MD	Main screen | Hypermemory 1-5 | Memory Scan. This item can be set independently for each Hypermemory.
39	SHIFT	Main Screen | Offset Frequency. This item is set independently for each memory channel.
40	SKIP	Main Screen | Skip, Skip HM 2, Skip HM 3, Skip HM 4 and Skip HM5. This item is set independently for each memory channel. The

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		multiple Skip columns are set independently for each Hypermemory configuration.
41	SPLIT	This option is handled automatically when Tone Mode is set to D Code, T DCS, or D Tone for using the Split Tone feature of the radio which uses a combination of CTCSS and DCS for transmission and reception. This radio can do independent CTCSS or DCS values for encode and decode; but, this is not how it is done. See the section on Independent Tones for details.
42	SQL TYP	Main Screen | Tone Mode. This item is set independently for each memory channel. ***Note: This item must be set before a CTCSS frequency or DCS code can be set.***
43	STEP	Main Screen | Step. This item is set independently for each memory channel.
44	TN FRQ	Main Screen | CTCSS. This item is set independently for each memory channel. This item can be set only after Tone Mode has been set to a selection that uses a CTCSS frequency.
45	TOT	Settings | Radio Menu Settings | Common tab | Time Out Timer
46	VFO BND	Main Screen | Hypermemory 1-5 | VFO Band Edge (checked for Off / Unchecked for On - default)
47	WID NAR	Main screen | Tx Narrow (unchecked - Wide / checked - Narrow)
48	WX ALT	Main Screen | Hypermemory 1-5 | Weather Alert (check to engage). Not only can this feature be engaged independently for each Hypermemory, a different NOAA weather frequency can be set for each Hypermemory, also.

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Part

9 Using Memory Banks

Memory banks offer a way to organize your channels for specialized operations. A simple scenario of this organization might include:

- Putting all your VHF and UHF ham repeaters into Bank 1. If you use your radio mainly for "hamming" you would operate in Bank 1 most of the time so you can scan without having to listen to all the other traffic.
- Then put your Fire and Rescue channels into Bank 2. When you're on the scene of an emergency, you would operate in Bank 2 to eliminate interference from the amateur traffic.
- If you travel for business to one other location repeatedly, put the channels for that location into Bank 3. When you are there, you operate in Bank 3. Then when you scan for activity, you scan 10 channels instead of the 100 you now have in memory. Remember, if one of these repeaters is the same as one in your "home" group, including Tone mode and value) there is no need to program that repeater into another memory channel. Simply include it in both Banks 1 and 3 to have it available in both locations.

This is a simple example. The types of activities may not even apply to you; but the concept is the same no matter what the activities.

Memory Bank Assignments

To assign a memory channel to a bank, check the box for that channel under the column for the Bank. Keep this in mind as you do your assignments:

A channel can be included in NO bank.

A channel an be included in ALL banks.

A channel can be included and not included as needed in your organization of your channels.

Use Settings | Bank Settings from the menu at the top of the main screen to make the process of assigning channels to banks easier. When Bank Settings is engaged, several columns are removed from the screen automatically. This makes it easy to work with the spreadsheet without having to scroll across so many columns.

Memory Bank Recall

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The programmer can be used to set up the memory bank assignments. It cannot, however, tell the radio which memory bank to use. That function is left to be done through the keys on the face of the radio.

To access the memory banks from the face of the radio.

Press the [V/M(MW)] key lightly to return to memory mode if necessary. Remember to touch lightly. If you press the key too long, the radio will attempt to save the frequency to a memory channel.

Now that you are in memory mode, press [SCAN(SEL)] key for 1/2 second (this will see like a long hold). The radio will enter bank selection mode. If your touch is too short, the radio will begin scanning.

Rotate the DIAL knob to select the memory bank. Only those that contain channels can be selected.

Once on the desired bank, press [BAND(SET)] to complete the selection.

The radio will now operate as if it is programmed with only the channels in that memory bank.

This process can be simplified by assigning the memory bank selection to a hypermemory. See details for that process in Hypermemories - Overview Using the suggested setup, you can select a bank with one button press.

Bank Linking

Check the box to "join" banks for scanning. When scanning is begun on any one of the banks in the linked group, all the channels of these banks will be included.

Note: Bank linking is only for scanning. When tuning manually in a bank, only the memory channels in that bank will be available.

You can have only one linked combination...so choose carefully.

Remember, if you begin scanning on a bank that is not linked, you will scan only the channels in that one bank.

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Part

10 Programming Memory Channels

The radio has lots of different types of memory channels. In the programmer, these all program in a spreadsheet dedicated to that "type" of memory.

Use the links to access details for any one of these.

- Regular memory channels - The several hundred all radios have these days. The ones you will use most often.
- Home (Call) Channels - One channel designed for one touch recall. See the owners' manual for the radio for recall details.
- Limit Memories - These memory channels can be used as "regular" memories giving you that many more memory channels for individual use; however, these also control the top and bottom range of scanning when using PMS scanning.
- VFO Memories - Settings for VFO operations when the file is first sent to the radio. This channel has no one button recall on the radio and will change when the tuning knob is used. To be able to recall settings at any time, use the Regular Memory Channels.

Details on the special editing abilities of the programmer are included in the ***Easy editing in the grid*** section. Review these details to make data entry even easier. At any time topics are available from the Table of Contents at the left.

10.1 Home Channels

The Home channel memory provides convenient, one-touch access to your most often used frequency in each band. Home channel memories are programmed on the Home tab of the Programmer.

The information to be programmed for the Home Channels is the same as that for the regular Memories. See Programmer Main Window for the details

Once programmed and sent to the radio, the Home channels are recalled by pressing the [**V/M**(**MW**)] once if operating in memory mode or twice if operating in VFO mode.

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10.2 Independent CTCSS or DCS Tones

A feature previously only in commercial radios, this radio has the ability to transmit TWO different CTCSS or DCS tones for one repeater. That's one tone in and a different one out.

"Independent" transmit and receive CTCSS or DCS tones are a function of Independent transmit frequencies or "Odd Splits". This seems a little strange when you want to use this feature with a "normal" repeater (one with a standard plus or minus 600kHz or 5 Mhz offset); however it can be done easily and will work for a "normal" repeater.

To setup this function in the programmer

- First, enter the Receive Frequency into that column of the programmer. This will be the frequency that you listen on.
- Press Enter. The programmer will fill the remaining columns with default information which may or may not be right for your particular situation.
- The Transmit field will be active as indicated by the dark border. Enter the Transmit Frequency from the information you have. (Note: Simply type the first number of that frequency. The field will change without having to erase what is there.)
- Press Enter.
- The programmer will blank the Offset Frequency since this value is not used by the radio for Split operations.
- The programmer will set the Offset Direction to Split.
- Press Enter until the Tone Mode field is highlighted for this channel. (You can fill in a Name on your way past that field if you want to use that feature of the radio).
- Once in the Tone Mode field, select TSql for CTCSS or DCS to use separate tones for transmission and reception.
- Set the CTCSS frequency value in the CTCSS and Rx CTCSS fields. (RX CTCSS is Receive CTCSS. This is the "out" tone for the repeater or the one associated with the receive frequency on the radio. This is the one that mutes YOUR radio.) Or select DCS codes from the DCS and RX DCS columns.

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- Set other options for this channel as needed for good performance. The other options are not related to this functionality. They are a part of the design of the radio to enhance the radio's performance in a given situation.

Notes:

Setting a Split for a "normal" repeater: *You are given details about a "normal" repeater (one that uses a standard 600kHz or 5.0 Mhz offset); but, it uses separate CTCSS tones for encode and decode.*

1. *You MUST enter the repeater as a Split to use the Independent tone function. To do this, enter the receive frequency.*
2. *Notice that the Transmit frequency field is completed with a value 600 kHz more or less than the Receive frequency. This is a "normal" repeater (at least for 2M).*
3. *Press Enter until you are in the Offset Direction column. Do NOT makes changes to the information in the columns between Receive Frequency and Offset Direction.*
4. *Set Offset Direction to Split. Notice that the Transmit Frequency remains unchanged (600 kHz more or less than the Receive Frequency) and the Offset Frequency field is blanked since the radio does not use this value for a split pair.*
5. *Press Enter until you get to the Tone Mode column.*
6. *Select TSql.*
7. *Set the appropriate values into the CTCSS and Rx CTCSS fields.*

The split pair uses only a Tone to get into the repeater: not two tones: *Enter the two frequencies as a Split Pair (see details above). Select Tone for the Tone Mode. Select the CTCSS frequency from those in the CTCSS column.*

I'm not sure which tone goes with which function (encode or decode): *That's one of the things that the programmer makes so easy for you. Program the channel as many times are you need to for all the combinations of frequencies and tones. Then once*

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you find the channel that works, delete the others from the programmer and reprogram your radio so that only the one "good" channel is available.

The frequency pair is a split and the system uses Tone Squelch; however, it uses the SAME tone for encode and decode: Setup the memory channel as a split be entering the Receive and Transmit frequencies. Set Tone Mode to TSql. Set the CTCSS and Rx CTCSS columns to the same value.

10.3 Programmable Memory Scan

This feature allows you to set sub-band limits for either scanning or manual VFO operation.

For example, you might wish to set up a limit (in North America) of 144.300 MHz to 148.000 MHz so as to prevent encroachment into the SSB/CW "Weak Signal" portion of the band below 144.300 MHz.

The upper and lower limits for the Programmable Memory Scan ranges are entered on the Limit Memories page of the programmer. This page is accessed via the tab of the same name at the bottom of the screen.

The same information as that entered for any memory channel is entered for these. See the Programmer Main Window section for the details about the information to be entered.

In the Programmable Memory Scan limit channels, **Step** becomes much more important since you plan to begin scanning from one of these channels. Remember that scanning will increment the frequency by the value in the Step field. Set the step value sufficiently small that you don't miss activity but sufficiently large that you cover the range in an acceptable time.

10.4 Regular Memory Channels

The Main window of the Programmer is designed for memory channel entry.

- All details associated with the memory channels are programmed from this screen.
- These are not all the functions of the radio. Other features are set once for the radio to use no matter which memory channel you're on. These other items are set on the Settings screen accessed through Settings | Radio

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Menu Settings from the menu at the top of the screen.

- Columns continue off the right side of the window. Use the bar at the bottom of the screen to move to these columns or press ENTER to step through each column.
- ***Make programming extra easy. Try Simple Mode in the software for even less to enter.*** In Simple Mode only the columns needed for the minimum information to set up the channel are shown on the screen. Extra columns are hidden and filled with default information. To put the screen into Simple Mode, select Edit | Simple Mode from the menu. While in Simple Mode, you cannot access the Preferences screen. The programmer controls what columns are hidden while in this mode.

Details to be entered for Memory Channels

Receive Frequency: Enter a receive frequency for the memory channel. Acceptable frequencies are detailed in the User's Manual for the radio.

- Unacceptable frequencies cannot be entered into the Programmer. Cellular frequencies are blocked.
- Memory channels can store any acceptable frequency in any order (i.e., UHF can follow VHF or any other band order).
- The first memory channel must be programmed.

Transmit Frequency: Enter a specific transmit frequency or let the Programmer calculate this frequency based on the offset. This field is always available; however the transmit frequency for an "odd split" is the only value that must be entered manually.

Note: In the Programmer you can enter details for frequencies outside the transmission abilities of the radio. The software will not enable transmission on these frequencies. Transmission will be possible only if the radio has been properly modified.

Entering a "Split" pair

When you are given information to program your radio, you may be given a "pair" of frequencies (one for receive and a different one for transmit). This pair is referred to as a split.

This information is easily entered into the programmer and sent to the radio.

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- First, enter the Receive Frequency into that column of the programmer. This will be the frequency that you listen on.
- Press Enter. The programmer will fill the remaining columns with default information which may or may not be right for your particular situation.
- The Transmit field will be active as indicated by the dark border. Enter the Transmit Frequency from the information you have. (Note: Simply type the first number of that frequency. The field will change without having to erase what is there.)
- Press Enter.
- The Programmer will set the Offset Frequency and Offset Direction as needed for this pair. (Ignore these two columns. They contain information critical to the memory of the radio so they cannot be blank. The Programmer has set them correctly for the radio.)

You are finished with this entry unless you need to enter Name, Tone or other details for this memory channel.

Offset Frequency: Standard offsets include 100, 500, and 600 kHz and 1.0, 1.6, 3.0, 5.0, and 7.6 MHz. Although an Offset Frequency is displayed for every memory channel, it is not used by the radio if the Offset direction is set to Simplex or Split. Again, it is just information critical to the memory of the radio.

Yaesu radios can use an Offset Frequency of any value in 50 kHz steps (i.e., any value ending in .x00 or .x50 where x is any digit from 0 to 9) with a Plus or Minus Offset Direction. This gives you the ability to use the Reverse function of the radio although your frequency pair is not separated by a standard offset value.

A ***non-standard Offset*** Frequency value is entered by typing it into the Offset Frequency field after the Receive Frequency has been entered. Then select Plus or Minus in the Offset Direction column and watch the Programmer calculate the Transmit Frequency.

Values would be entered as an exact value including the decimal to denote kHz. For example, given the pair 146.650 and 147.300, the Offset Frequency entered would be .650 (decimal - six - five - zero) with a Plus Offset Direction. Without the decimal, an error is raised in the Programmer that a valid Offset Frequency should be entered.

As another example, given the pair 147.255 and 145.940 could not be entered with an Offset Frequency and an Offset Direction. The resulting offset for this pair us 1.315 MHz, which is not on a 50 kHz step. This pair requires

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entry of both the Receive and Transmit frequency with the Offset Direction set to Split. In this case, any value that appears in the Offset Frequency column will be ignored by the radio when it uses this memory channel.

The default Offset Frequency depends on the band of the Receive Frequency being entered (i.e., 2M Band is always 600 kHz, 430 Band is always 5.0 MHz, etc)

As in Splits, the Offset Frequency value is ignored when the Offset Direction is set to Simplex.

Offset Direction: Select

Simplex - Transmit and receive frequencies are the same. Remember, when you use Simplex, the radio does not use any value that appears in the Offset Frequency column. It will transmit and receive on the SAME frequency.

Minus -The Offset Frequency is subtracted from the receive frequency yielding the frequency on which you will be transmitting.

Plus - The Offset Frequency is added to the receive frequency yielding the frequency on which you will be transmitting.

Split - Used when a non-standard offset is required. The user enters both the receive and transmit frequencies.

Operating Mode: Assign AM or FM as appropriate for the frequency. The radio receives in AM. It does not have the ability to transmit in that mode.

Name: Enter an Alpha/Numeric tag (up to 6 characters) to a memory channel to provide an easy reminder of the function of a particular channel.

Show Name: Check the box to have the Name displayed on the radio rather than the operating frequency. This option is checked (ON) automatically by default in the programmer when a name is entered.

Even if you enter a name, you can choose not to display that name by removing the check mark in the Show Name box.

The option to set this field automatically can be changed on the Memory Defaults tab of the Preferences screen (select Settings | Preferences at the top of the main screen of the programmer).

When using the radio, press the [B] key on the microphone to toggle the display between Alpha and Frequency.

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Note: Pressing the [BAND(Set)] button appears to toggle the radio from alpha to frequency display. However, this button press puts the radio into Memory Tune. If you turn the [DIAL] in an attempt to change memory channels, you will change the frequency of the memory channel you are on rather than changing to another stored memory channel.

Use the [B] key on the microphone to change between alpha and frequency display.

Tone Mode: The Tone system of the new FT-7900 differs from the FT-7800. Use of the tone systems of the radio allows for silent monitoring until a call is received with a corresponding tone. Tone mode also allows access to repeaters that are made private with a PL tone. The FT-7900 has the ability to store and use independent CTCSS and/or DCS tone modes for a the transmit and receive frequencies. This allows you to use a different CTCSS frequency or DCS code for transmit (encode) and receive (decode). This function is often described as "one in and a different one out" and is used by many commercial systems.

Use of either of any of the tone systems requires two steps:

1) Turning on the Tone Mode and

2) Setting the CTCSS tone frequency or DCS code.

1) The **Tone Modes** include:

None - No tone system activated. Even if the CTCSS Tone or DCS Code columns are set to a value, transmissions will not get through unless this column is set to an the proper function.

Tone- CTCSS tone generator is activated for ***transmission only*** This mode is used for many if not most repeater operations.

- When this option is selected, the CTCSS column becomes available. Select the tone frequency from those in the list. The value must be in the list.
- With Tone selected as the Tone Mode, the value that appears in the Rx CTCSS, DCS and Rx DCS columns are ignored by the radio.

TSql - CTCSS tone squelch is activated for ***both transmission and reception using one tone frequency for both***. In this mode only signals setup with ("encoded") the same tone will open the squelch. Your radio will remain silent otherwise.

- When this option is selected, for simplex or normal repeater

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operations (not split) ***only*** the CTCSS column becomes available ***because the radios uses the SAME CTCSS frequency for both transmission and reception.***.

- Select the tone frequency from those in the list. The value must be in the list. The radio uses the one frequency set in the CTCSS Tone column for both Encode and Decode (transmission and reception)
- The values that appear in the RX CTCSS, DCS, and RX DCS columns are ignored by the radio.

Rev CTCSS (Rev Tone) - Activates the reverse CTCSS Decoder which ***mutes the receiver*** when a matching CTCSS tone is heard.

- When this option is selected, the CTCSS column becomes available. Select the tone frequency from those in the list. The value must be in the list.
- The values that appear in the RX CTCSS, DCS and Rx DCS columns are ignored by the radio.

DCS - Digital Coded Squelch mode is activated for ***transmission and reception using one DCS code for both***. This mode is used in many commercial systems.

- When this option is selected, the DCS column becomes available. Select the code from those in the list. The value must be in the list.
- The radio uses the DCS Code for both transmissions and reception.
- The values that appear in the CTCSS, Rx CTCSS and Rx DCS columns are ignored by the radio.

D-Code - Digital Coded Squelch mode is activated for ***transmission only***. This function is very similar to Tone; however, a DCS code rather than a CTCSS frequency is used.

- The radio uses the DCS Code set in the DCS code column for transmissions only. Reception is open for any signal.
- The values that appear in CTCSS, Rx CTCSS and Rx DCS are ignored by the radio.

T DCS - ***CTCSS*** tone generation is activated for ***transmission*** and ***Digital Coded Squelch*** mode is activated for ***reception***.

- The CTCSS and Rx DCS columns become available to set the tone

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values for this function.

- The values that appear in the Rx CTCSS and DCS columns are ignored by the radio.

D Tone - ***DCS*** is activated for ***transmission*** and ***CTCSS*** tone generation is activated for ***reception***.

- The Rx CTCSS and DCS columns become active to set the tone value for this function.
- The values that appear in the CTCSS and RX DCS columns are ignored by the radio.

2) Setting the **CTCSS tone frequency** or **DCS code**.

CTCSS Tone: Select one of 50 tone frequencies to be used in the Encode and Decode modes. This value is set independently for each memory channel and will be used by the radio for both reception and transmission if the channel does not have an operating mode of "Split". This field is active only if the Tone Mode is set a mode that uses a CTCSS tone. A value that appears in this field is ignored if one of the tone modes that uses CTCSS is not activated.

Rx CTCSS Tone: Used for independent frequency pairs when ***separate tones are needed for transmission and reception***. This is the tone for reception (Rx - Receive).

DCS Code: Select one of the 104 codes available for use when the radio is in DCS mode. This value is set independently for each memory channel. This field is active only when a Tone Mode for DCS is selected. A value that appears in this field is ignored if one of the tone modes that uses DCS is not activated.

Rx DCS Code: Select one of the 104 codes available for "special" DCS functions. This field will become active when a value needs to be set. This value is set independently for each memory channel. This field is active only when a Tone Mode for DCS is selected. A value that appears in this field is ignored if one of the tone modes that uses DCS is not activated.

Using "Independent" CTCSS or DCS Tones

"Independent" transmit and receive CTCSS or DCS tones are a function of

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Independent transmit frequencies or "Odd Splits". This seems a little strange when you want to use this feature with a "normal" repeater (one with a standard plus or minus 600kHz or 5 Mhz offset).

To setup this function in the programmer

- First, enter the Receive Frequency into that column of the programmer. This will be the frequency that you listen on.
- Press Enter. The programmer will fill the remaining columns with default information which may or may not be right for your particular situation.
- The Transmit field will be active as indicated by the dark border. Enter the Transmit Frequency from the information you have. (Note: Simply type the first number of that frequency. The field will change without having to erase what is there.)
- Press Enter.
- The programmer will blank the Offset Frequency since this value is not used by the radio for Split operations.
- The programmer will set the Offset Direction to Split.
- Press Enter until the Tone Mode field is highlighted for this channel. (You can fill in a Name on your way past that field if you want to use that feature of the radio).
- Once in the Tone Mode field, select ***TSql to use separate tones for transmission and reception***.
- Set the CTCSS frequency value in the CTCSS and Rx CTCSS fields. (RX CTCSS is Receive CTCSS. This is the "out" tone for the repeater or the one associated with the receive frequency on the radio. This is the one that mutes YOUR radio.)
- Set other options for this channel as needed for good performance. The other options are not related to this functionality. They are a part of the design of the radio to enhance the radio's performance in a given situation.

Notes:

Setting a Split for a "normal" repeater: You are given details about a "normal" repeater (one that uses a standard 600kHz or 5.0 Mhz offset); but, it uses separate CTCSS tones for encode and decode.

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1. ***You MUST enter the repeater as a Split to use the Independent tone function. To do this, enter the receive frequency.***
2. ***Notice that the Transmit frequency field is completed with a value 600 kHz more or less than the Receive frequency. This is a "normal" repeater (at least for 2M).***
3. ***Press Enter until you are in the Offset Direction column. Do NOT makes changes to the information in the columns between Receive Frequency and Offset Direction.***
4. ***Set Offset Direction to Split. Notice that the Transmit Frequency remains unchanged (600 kHz more or less than the Receive Frequency) and the Offset Frequency field is blanked since the radio does not use this value for a split pair.***
5. ***Press Enter until you get to the Tone Mode column.***
6. ***Select TSql.***
7. ***Set the appropriate values into the CTCSS and Rx CTCSS fields.***

The split pair uses only a Tone to get into the repeater: not two tones: Enter the two frequencies as a Split Pair (see details above). Select Tone for the Tone Mode. Select the CTCSS frequency from those in the CTCSS column.

I'm not sure which tone goes with which function (encode or decode): That's one of the things that the programmer makes so easy for you. Program the channel as many times are you need to for all the combinations of frequencies and tones. Then once you find the channel that works, delete the others from the programmer and reprogram your radio so that only the one "good" channel is available.

The frequency pair is a split and the system uses Tone Squelch; however, it uses the SAME tone for encode and decode: Setup the memory channel as a split be entering the Receive and Transmit frequencies. Set Tone Mode to TSql. Set the CTCSS and Rx CTCSS columns to the same value.

Step: The frequency that the radio is on changes by the value of the step when tuning manually (in VFO or Memory tune). This value is not critical in memory mode since the original memory channel frequency can be retrieved by exiting Memory Tune mode. In VFO, this value could keep you from returning to your original frequency.

Clock Shift: Shifts the internal reference frequency slightly to eliminate "birdies" that

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interfere on other channels.

Tx Power: The output power can be set individually set for each memory channel to address the exact needs of each operation. Select Low or High for each memory channel. The power out for each of these settings varies for this radio depending on its power source (battery or DC power supply) and frequency. See the User's manual for the specifics.

TX Narrow - Tx Narrow pertains to mic gain or deviation. Check to set microphone deviation to narrow. Controlling microphone deviation reduce the microphone input level for operating on tightly clustered repeaters (channel spacing of 12.5 or 15 kHz or less). This will reduce the transmitter deviation minimizing interference to other users.

Note: This radio has the ability to transmit with a narrower bandwidth; however, it will continue to listed at a wider bandwidth which may allow you to hear some interference on a specific frequency.

Skip: Marks selected memory channel to be ***skipped during scanning*** These channels remain available for manual selection by turning the knob. The radio has five different skip settings for each memory channel. The column labeled "Skip" is set whenever the radio is programmed. The other skip configurations, Skip HM2, Skip HM3, etc, are accessed by pressing the Hypermemory buttons around the display of the radio.

- Off indicates that the channel will be scanned for activity whenever scanning is done.
- Skip indicates that the channel will be skipped.
- P-scan puts the channel into a special scanning group. These channels are scanned when scanning is begun on a P-scan channel.

Bank: Check the box to assign a memory channel to a given Bank. In a Yaesu radio, you can assign a channel to none, one or all banks. Once a channel is in a bank, it is in that bank no matter which Hypermemory is in use. For easier entry, select Settings | Bank Settings to hide column other than the receive frequency, name, and banks.

- A memory channel can be assigned to all Banks by checking all of the columns or it can be omitted completely by not checking a box at all.
- When the radio is operated in Memory Bank Mode only those channels assigned to the selected Bank will be available for manual tuning and/or

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scanning.

- There is no need to put all the memories in all the memory banks. All the memories are available when you are not operating in a selected memory bank.

Comments An identifying comment up to 80 characters. This information is not transferred to the radio.

10.5 VFOs

The VFO memories provide "temporary" memory channels for quick access. The VFO memory is temporary since it is lost when the radio is tuned while in VFO mode.

Note: Remember, the VFO memory is temporary. The programmed frequencies appear immediately after the file is sent to the radio. When the radio is manually tuned in VFO mode, the programmed frequency cannot be recalled as a memory channel frequency will be.

Programming the VFO memory from the Programmer can be particularly helpful for reoccurring events for which the details of this channel are needed along with other memory channels.

The radio has five different VFOs (one for each band) in each of the five hypermemories. That's 5 separate VHF, UHF, etc VFO channels that you can store.

Memories do not have to be programmed into VFO before being programmed into the memory channels when using the Programmer. Memory channels are programmed directly into the spreadsheet that appears when the Programmer opens.

The information to be entered is the same as that for regular Memories except that the VFO's do not have a Name available to be programmed. See Programmer Main Window for details of the fields.

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Part

11 Hypermemories - Overview

When you purchased the FT-7900, you got not one, but five radios. It does not look like five. There is only one radio sitting there; but, in that radio there are five configurations that you can set differently for activities in which you participate. The one thing common to these five radios are the memory channels. It's how each "radio" uses these memories that makes each hypermemory unique.

Hypermemory may not have been the best name for this feature. These are NOT additional memory channels. Memory channel information is NOT put into a hypermemory. The memory channels are entered on the Memories tab. In the hypermemories, you set other features of the radio to use those memories.

Let's work with examples...

You participate in ham radio in an area with lots of VHF and UHF repeaters. You also listen to the fire and police frequencies in your area. And you are involved with trains and their communications. You have 157 memory channel frequencies that you have collected for these activities plus you want to be able to monitor the NOAA weather channels.

You have a list of the following frequencies.

45 VHF Ham repeaters

55 UHF Ham repeaters

42 Police and Fire department frequencies

15 Train frequencies

You program these into memory. A part of the file might look like this...

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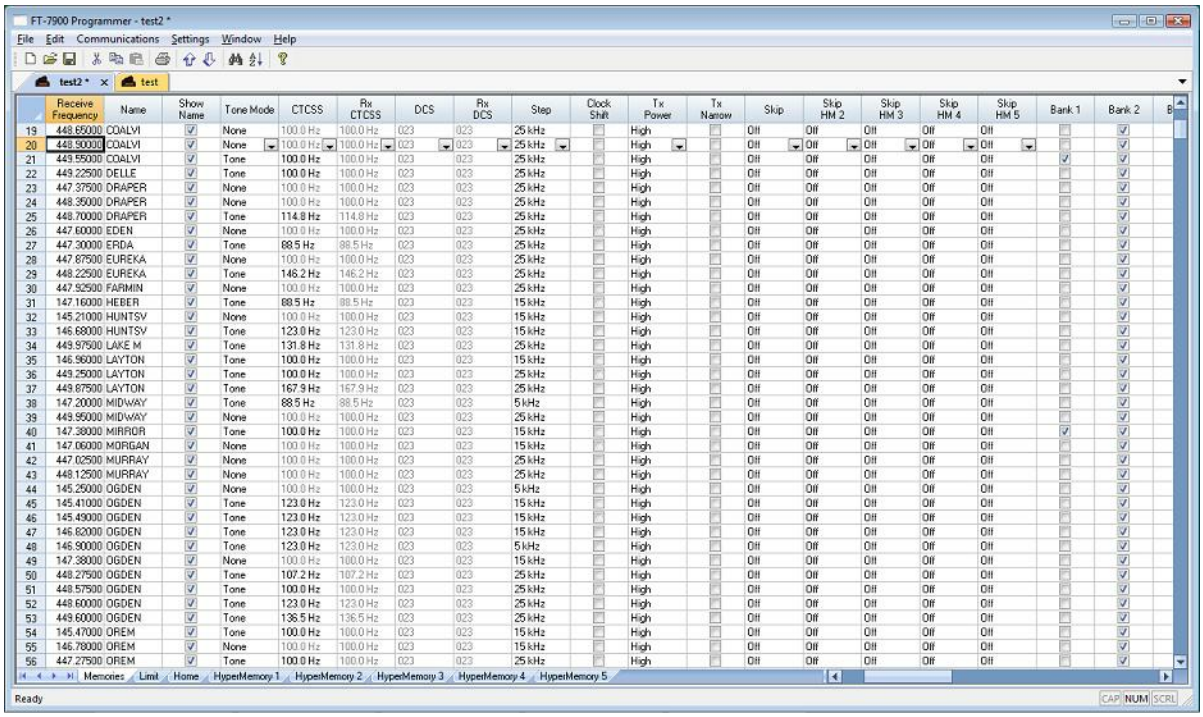

While programming into memory, you have two pieces of organization to consider...

1) Will I organize these into banks so they are completely isolated in each of the "radios" (hypermemories)

2) Will I only control how these memories scan on each of the "radios" (hypermemories); but, have them all available all of the time.

3) Or will I do both...limit the channels that are available AND how they scan.

For each case:

1) Organize these channels into banks so they are completely isolated on each of the "radios" (hypermemories).

- Program the channels into memory.
- Save the file (This is a good idea to do occasionally while you work to keep from losing work you have done.)
- Select Settings | Bank Settings from the menu at the top of the screen. The screen changes to include only the frequency, name and banks. This makes it easier to use the program when you don't have to scroll across columns not being used. The screen looks like this... notice a lot of the columns are not there.

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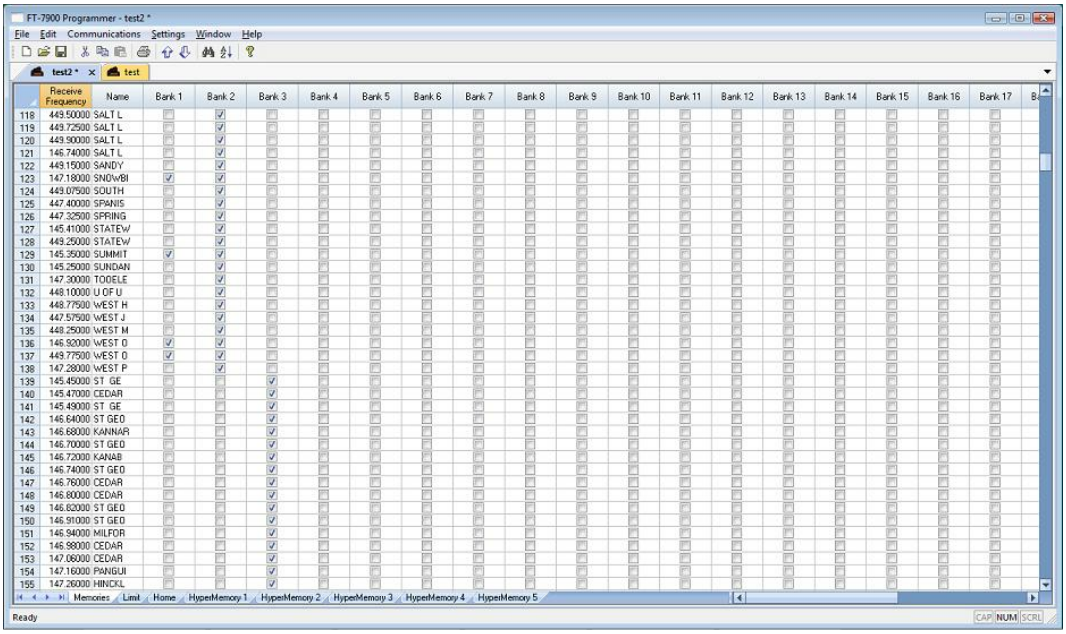

- Put the VHF Ham frequencies into Bank 1 (check the Bank 1 box in the row with of each of these memory channels. This can be done by checking the first one then copying the check to the remaining ones... all at one time. See ***Easy Editing in the Grid*** for more details on copy and paste.)
- Put the UHF Ham frequencies into Bank 2
- Put the NOAA weather into Bank 4 (yes, Bank 4. We have another use for Bank 3)
- Put the train frequencies into Bank 5
- Bank 3...you have a selection of the local repeaters, that you talk on often rather than just listening.

Now, while using the radio, you could access these banks at any time from the face of the radio by pressing the [V/M] key for 1/2 second, rotating the dial to select the bank to be used, pressing the [Set] to establish that selection.

Or you can press a single hypermemory button...it's all in the programming.

- Access Hypermemory 1 (select that tab at the bottom of the main window).
- Check the Mode is set to Memory

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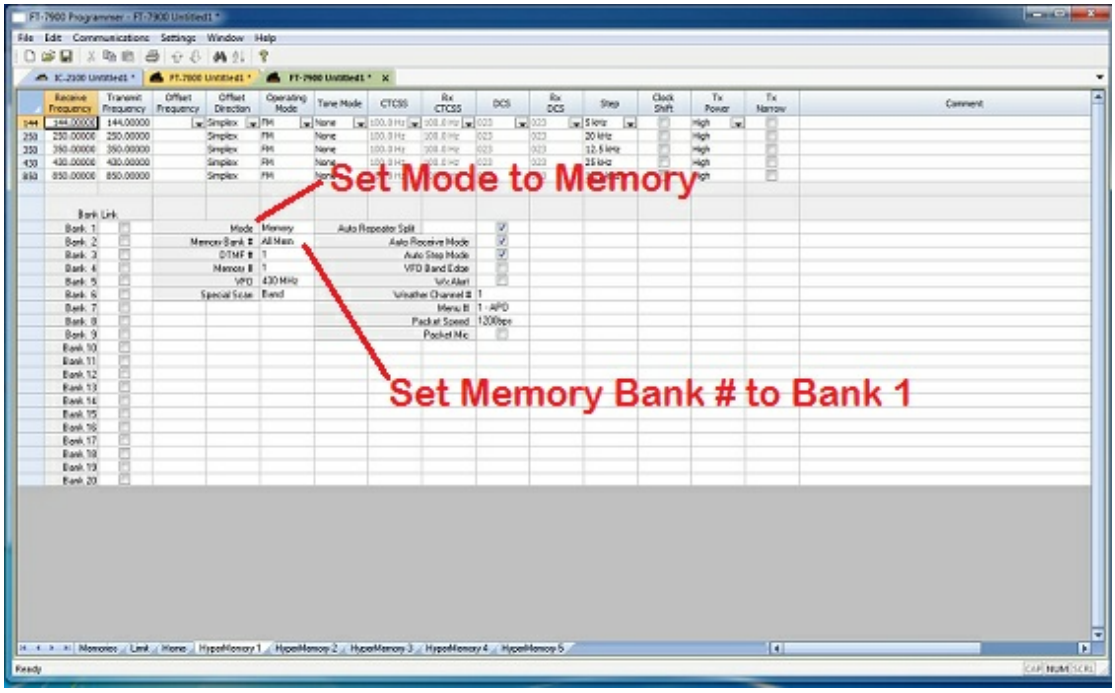
- Memory Bank # is set to 1.



Now when you press the 1 button from those around the face of the radio, you will be operating only on the VHF frequencies you have programmed. The others will not be available. It will be as if these are not programmed in the radio.

Repeat this process in Hypermemory 2 for Bank 2, Hypermemory 3 for Bank 3, Hypermemory 4 for Bank 4 and Hypermemory 5 for Bank 5.

In this case, I would recommend you set Hypermemory 6 as Mode = Memory and Memory Bank # = All Memories so that with one touch ALL your memory channels are immediately available.

With the press of one button it's as if you're using a different radio.

2) Will I control ONLY how these memories SCAN on each of the "radios" (hypermemories); but, have them ALL AVAILABLE ALL OF THE TIME.

- Program the channels into memory. (You can set the Bank selections if you want. You won't be using them in this scenario).
- The columns Skip, Skip HM1, Skip HM2, etc., represent the skip/scan setting. There are five different ones for each memory channel. The Skip/

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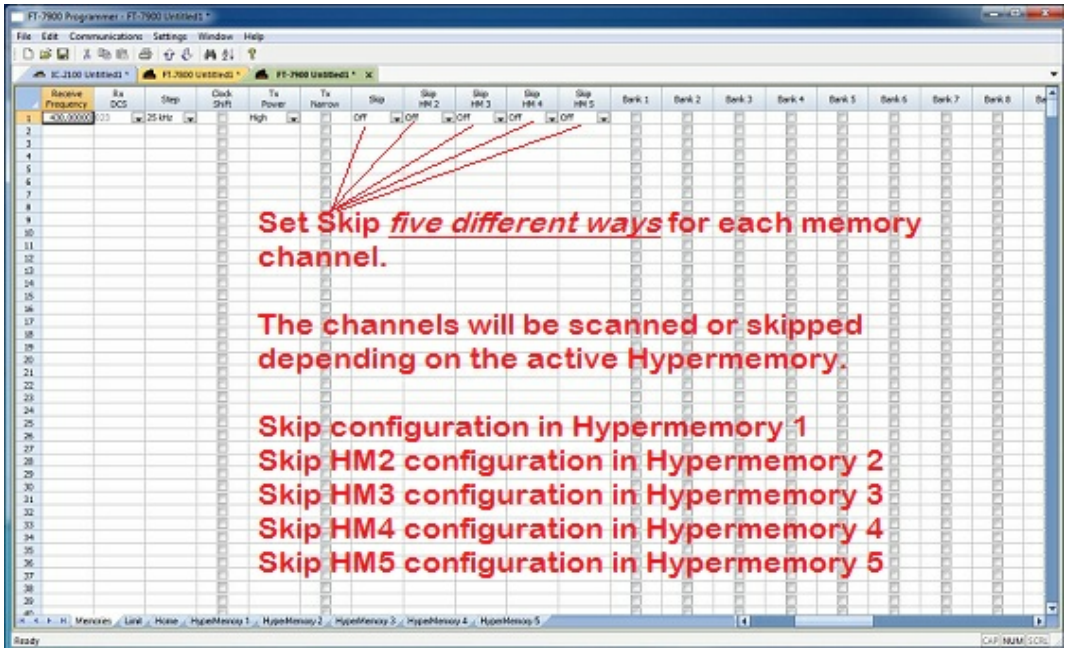
Scan setting is unique for each "radio" (hypermemory).



- For the VHF channels, leave Skip as Off (this channel will be scanned). Set Skip HM2, Skip HM3, and Skip HM4. Leave Skip HM5 as Off. "Skip HM5" will be off for ALL channels allowing you to scan all of your memory channels when using that "radio" (hypermemory).

Note: The easiest way to change the scan setting for several channels is to cut and paste the selection in that column: especially if the channels to be changed are consecutive.

- Select the first channel to be set and set the value in the column.
- Enter or tab out of that cell..
- Back arrow back into the cell..
- Press Ctrl C to copy that value.
- Move to the first of those to be set (down arrow will move within that column. Goto may be helpful if you're going a long way in the file).
- Use the mouse to select the cells to be changed. Hold the shift while moving the mouse over the group or hold the shift and press the

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down arrow for a multiple selection.

- Press Ctrl V to paste the new value into the cell.

- For the UHF channels, leave "Skip HM2" and "Skip HM5" as Off (this channel will be scanned). Set Skip, Skip HM3, and Skip HM4 to Skip.
- Repeat this process setting "Skip HM3" and "Skip HM5" as Off (this channel will be scanned) for each of the other channel designations.

Now when you use the radio when you press the Hypermemory 1 key then the [SCN] key, the radio will search through only the VHF channels. When you press the Hypermemory 2 key then the [SCN] key, the radio will search through only the UHF channels, etc through each of the channel groups with which you are working.

This is the only thing different with each "radio" (hypermemory). ALL memory channels remain available for manual tuning. Only scanning is affected with in this setup.

3) Or will I do both...limit the channels that are available AND how they scan.

Now imagine, you program your radio as described in scenario 1 with the memories separated into Banks and set the "radios" (hypermemories) to use these banks one at a time.

Also, you set Skip/Scan options using the Skip, Skip HM2, Skip HM3, etc for these channels.

Now, when you are in a particular "radio" (hypermemory), all the channels of the bank are available for manual tuning; but when you scan, only a select group is included.

The options are endless. Described here are very simplistic scenarios that manipulate Banks and Skip/Scan settings only. Look at the settings on the Hypermemory screens and use planning to configure these to best suit how you will use the radio. Now rather than having to reprogram your radio for a different activity, you can preprogram for on-touch access to the configuration for that activity.

If you prefer to have the radio act like the same radio all the time, you can use the Simple Mode option in the programmer for easier data management. To access Simple Mode, select Edit | Simple Mode from the main menu at the top of the screen. When you program the radio with Simple Mode, all the options of the "radios" (hypermemories) are set automatically to the same value. No matter which button you press around the face of the radio, other than changing the memory channel

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you're on, there will be no other change to the functionality of the radio.

11.1 Hypermemory Programming

Displayed on the Hypermemory screen are the options of the radio that can be set not once, but *5 different ways* depending on how you will be using the radio while in this hypermemory. See the detail on hypermemories in the Hypermemories - Overview section of this help. This section gives additional information to explain using hypermemories. Successful use of the hypermemories depends on organizing the data. Understanding the concept of hypermemories is the first place to start to understand how to get your best use from them.

This section addresses the options and their settings.

To recall a Hyper Memory channel, press the appropriate Hyper Memory key (1-5) located along the sides of the face of the radio.

Note: If you make changes to the programming of the radio from the face of the radio while in one hypermemory then change to another hypermemory, those changes may not be saved (depending on what you changed) unless you save the hypermemory also. If you have trouble remembering which hypermemory you're in at the moment, you might want to save one of the hypermemories for temporary storage of the current configuration. Then, if you have made changes, be sure to save the current configuration to that "save" hypememory before you access a different hypermemory.

Storing a Hyper Memory Channel from the face of the radio can cause the radio to reset especially if the process is not completed properly. To store a Hyper Memory Channel

- Be sure the configuration to be saved is displayed on the radio

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- Select a Hyper Memory Channel (1-5). Press and hold the button for that Hyper Memory Channel
- Realize that the display will change to show the information of that Hyper Memory Channel. If that Hyper Memory Channel has not been programmed, the display will change to default values.
- The manual says to hold that Hyper Memory Channel button for 2 seconds. This will NOT complete the process and will reset the radio. The button must be held until the radio Beeps three times and then sounds a long tone.
- Release the button for the Hyper Memory Channel once the long tone sounds. The Hyper Memory Channel programming will be complete.

Changes can be made to the settings for use by the radio in the fields as follows:

VFO Memories - Settings for the VFO memories are the same as those for other memory channels. See details for these settings on the Programmer Main Window section of this help.

- In the VFO channels, Step becomes much more important since this determines the change to the frequency when you scan or when you tune manually. Be sure to set Step appropriately for the band and frequency entered.
- There are five separate VFO channel: one for each band. Each band can be set differently for each hypermemory.
- There is no Name for a VFO channel.
- The radio has five different sets of VFO channels. One in each hypermemory.

Other Hypermemory Settings:

Bank Link: Check to "link" banks of memory channels. When scanning begins in one of these banks, all the channels of the linked banks are scanned. The channels of the other banks are not available when tuning manually if you are operating in only one of the banks.

Mode: The operating mode of the radio. The options for this setting are VFO, Memory, or Home. The default is Memory.

Memory Bank #: The memory bank that will be active when this hypermemory is selected from the face of the radio. The selections are AllMem and Banks 1-10. The default is AllMem. When you set this option to a Bank selection you get one

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touch access to that memory bank.

DTMF #: The active autodial memory channel number

Memory #: This is the channel that will be active whenever this hypermemory is accessed from the face of the radio. If using banks, select a channel number within the assigned bank. If the channel is not within the bank the radio will default to the first channel of the memory bank.

VFO: This is the VFO band that will be active when this hypermemory is access from the face of the radio if the radio is in VFO mode.

Special Scan: Set the scan limits for VFO scanning. Choices are

- Band - Scanning sweeps frequencies in the current band
- +-1MHz - Scanning sweeps frequencies 1MHz above or below the starting frequency
- +-2MHz - Scanning sweeps frequencies 2MHz above or below the starting frequency
- +-5MHz - Scanning sweeps frequencies 5MHz above or below the starting frequency
- ALL - Scanning sweeps all frequencies between 108 and 520 MHz and 700 to 999.990 MHz.
- PMS - Scanning sweeps frequencies within the currently selected scan limits where "x" is the number of the limit pair. Scan Limits are set on the Right Limit and Left Limit tabs as the "L" (lower) and "U" (upper) pairs. See the section on Limit Memories for more details.

Memory Scan - Select the channel selection mode for memory scanning.

Memory - The scanner will skip the P Scan channels.

Only - The scanner will scan only those channels marked for P Scan.

Note: Scanning options are set on the main page of the programmer for each memory channel. There are five scanning options for each channel. These correspond to each hypermemory. Different arrangements of scan (off), skip (omit) and p scan (grouping) can be set up to suit particular activities.

Auto Repeater Split - Check the box to engage the Automatic Repeater Shift feature of the radio. The Automatic Repeater Shift feature causes the appropriate

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repeater shift to be set automatically applied whenever you tune into the designated repeater sub-band. If ARS becomes disengaged, frequency offsets will no longer appear automatically.

Auto Receive Mode - Check the box to engage the Auto AM feature of the radio. The Auto AM feature causes the radio to use AM mode automatically for receiving in the appropriate frequency range.

Auto Step Mode - Check to allow the radio to automatically set an appropriate step for a frequency entered. This is especially helpful for frequencies on 12.5 kHz step.

VFO Band Edge - Check the box to engage the VFO Band Edge feature of the radio. With Band Edge set to On, Band scanning will continue from the high end of the current band to the low edge of the next-highest band.

Wx Alert - Check to engage the Weather Alert feature.

Weather Channel # - Select the weather channel that is active when this hypermemory is in use.

Menu # - Select one of the 47 items of the "Set" menu. This menu item will be active when the Set menu is first called after the radio is programmed with this file. This selection would make it easy to access an often changed setting. Select that one item from the list, then when the [SET] key is pressed, that item will be immediately available to be changed.

Packet Speed - Set to 1200bps or 9600bps as needed for packet operations.

Packet Mic - Check to engage this feature.

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Part XII

12 Programming Other Set Menu Items

Programming any radio involves details for each memory channel and settings that are global to the radio no matter which memory channel, VFO or Call channel you're operating on.

The Memory Channel details are entered on the grid that appears when the programmer is first opened. This is only part of what needs to be done to make your radio your own.

The Global Settings are entered on the screens accessed from ***Settings | Radio Menu Settings*** in the menu at the top of the main screen. Don't miss these settings. Getting them the way you want them can significantly enhance the performance of your radio.

Details for the options are found in sections of this help that correspond to the screens in the programmer where you will find that option. Everything starts in the programmer from Settings | Radio Menu Settings from the menu at the top of the main screen.

Radio Menu Settings - General Overview - This is a general discussion of how the programmer handles these settings relative to the memory channel file. There are several options available to make it as easy as possible for you to maintain the memory channels and settings that you use in your radio.

Radio Menu Settings - Common - The screen that opens when you select Settings | Radio Menu Settings. This screen contains the more commonly changed settings such as Beep, Lock and options for Scanning functions.

Radio Menu Settings - DTMF - A separate tab of the settings screen. Fields here address options for DTMF functionality.

You will find that these headers correspond with screen names in the programmer. This makes finding the details for the settings on a certain screen easier.

12.1 Radio Menu Settings - Common

Your radio has other menu items that are not associated with each memory channel. These menu items are "global" to the radio's functionality. The radio uses these settings no matter what memory channel you're on, what frequency of operation you're in, if you're in VFO or memory.

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If you radio "acts funny" once it is programmed with a file of memory channels, check the settings file to be sure things are set correctly. Then be sure to save the settings file so your personal touches will go to the radio with every file. (File | Save from the menu on the Settings screen). The settings file then works in conjunction with the memory channel file to program your radio.

Band Edge Beep - Enable / disable an audible indication that you have reached the edge of a frequency band when you are tuning the radio with the DIAL knob.

Priority Revert - Enable / disable the Priority Revert Mode. With this mode enabled and Priority Channel Scanning engaged, the radio will move to the Priority channel instantly when the PTT is pressed without having to wait for activity to appear on the Priority channel. More details can be found about Priority Channel Scanning in that section of this help.

Memory Only - Enable / disable Memory Only mode. In Memory Only mode, VFO, Home and Weather channel operations are not available. Also, many of the keys on the face of the radio as disabled. These limitations make the radio simpler to use which can be especially helpful in a setting of multiple operators who may be unfamiliar with this equipment.

Auto Power Off - Set the time after which the transceiver will automatically shut off. Default is Off.

Beep - Enables / disables the beeper for:

Key - The beeper sounds when a key is pressed.

Key + Scan - The beeper sounds when you press a key or when the scanner stops on an active frequency.

Off - Disables the beeper.

ARTS - These options are described in detail in the Auto Range Transponder System section of this Help along with general information about this function of the radio.

DCS Polarity - The Normal or Inverted setting for DCS coding is set once for the radio to use for all memory channels using a DCS code. For more details on this function, see the section on DCS Code Inversion in this help and in the User's Manual for the radio.

- T/RX Normal - Normal DCS operations for transmit and receive
- RX Reverse - Reverse operations for receive and normal operations for

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transmit

- TX Reverse - Reverse operations for transmit and normal operations for receive
- T/RX Reverse - Reverse operations for transmit and receive operations. The default is T/RX Normal.

Dimmer - Set the brightness of the front panel display. Select Dim1, Dim2, Dim3 or Off. The default is Dim1.

Hyperwrite - Enables or disables the Automatic Writing feature for the HyperMemory. The radio has hypermemories that store confirmations of the radio. While using your radio if you change bands, memory channels, frequencies, etc, during normal operations, these changes will be lost when you recall another hypermemory unless you save your changes. This process is similar to having to resave a memory channel after changing one characteristic of it. See the details in Hypermemory Programming of this help for how to manually save a hypermemory. The options of this feature help you with this "saving".

- Manual - You must manually re-save any changes made.
- 1-Auto - Enable the automatic Writing feature for Hypermemory 1 only. The changes made while operating in Hypermemory 1 will be saved automatically while those for Hypermemory 2-5 must be handled manually.
- Auto - The Automatic Writing feature is engaged for all Hypermemories.

Internet - The radio can be used to access the WIRES Internet system. See Internet Function Settings of this Help for details of this functionality and the option settings.

Lock - Select the combination of radio functions that are locked when the lock function is engaged from the face of the radio. Combinations control front panel keys, the tuning dial and the PTT switch. To engage the lock, press and hold the orange button next to the power switch on the face of the radio until the lock symbol appears on the radio's display.

Microphone -Set the microphone type to be used. Values are MH-42 and MH-48. The default is determined by the version of the radio being programmed. You can check the front of the microphone to verify your selection for this setting.

RF Squelch - Adjust the RF squelch threshold level for receive signals. The RF Squelch function allows you to set the squelch so that only signals exceeding a certain S-meter level will open the squelch. Select S-1, S-5, S-9 or S-Full. With a higher setting, only strong signals will be received. The default is Off.

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Scan Resume - Selects the Scan Resume mode. Available values are BUSY and TIME as described below. The default is Time

- Busy - The scanner will hold until the signal disappears, then will resume when the carrier drops.
- TIME - The scanner will hold for the five seconds, then resume whether or not the other station is still transmitting.

Smart Search - Set the Smart Search sweep option. Available values are Single and Continuous (as described below). The default is Single.

- Single - The transceiver sweeps the current band once in each direction starting at the current frequency. All channels with activity (up to 15 in each direction) are loaded into the Smart Search memories. Whether or not all the memories are filled, the search is halted after one sweep in each direction.
- Continuous - The transceiver sweeps in each direction starting at the current frequency continuously until all the Smart Search memories are filled.

Time out Timer - Set the maximum time of continuous transmission after which the radio is forced back into receive mode. Available values are 1 to 30 minutes and Off. The default is 6 minutes.

Programmable Keys

P1/P2/P3/P4 - Default functions of the radio have been assigned to these microphone keys. Shown in the Programmer are the defaults of Band / VFO-MR / Tone / Low (Power setting), respectively. The function of these keys can be changed to:

- ARTS - Activates the ARTS function
- Band - Selects main band of operation: VHF or UHF
- DCSC - Shortcut to Menu item #9 where you can select the DCS code
- Home - Switches frequency to the Home channel
- Low - Sets power output level

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- MHz - Enables selection of the "MHz" digit of the frequency
- Priority - Activates Priority Channel monitoring.
- Reverse - Reverses repeater transmit / receive frequencies
- Repeater - Selects repeater shift direction
- Scan - Activate scanning
- SSCH - Activates Smart Search
- Sql Off - Opens the squelch to allow reception or all signals
- T Call - Activates 1750 Hz tone burst
- TN FQ - Access to Menu item 44 where you can select the CTCSS tone frequency
- Tone - Selects the CTCSS or DCS mode and tone/code
- VFO/MR - Switches between VFO and Memory functions
- Weather - Recall the weather broadcast channels.

Prg Panel [Low(ACC)] - Change the function of the radio to be activated when the [Low(ACC)] key is pressed and held. Available functions to be assigned include:

- Weather - Recall the weather broadcast channels.
- Reverse - Reverses repeater transmit / receive frequencies
- Repeater - Selects repeater shift direction
- Squelch Off - Opens the squelch to allow reception or all signals
- Lock - Shortcut to Menu item #21 which selects the key locking scheme.
- Dimmer - Sets the display brightness.

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12.1.2 Auto Range Transponder System

The Automatic Range Transponder System (ARTS) uses DCS signaling to inform you and another ARTS-equipped station that they are within range for communication. You need not have two matching radios to use this function. Any two radios equipped with the ARTS function can be used.

ARTS is used in simplex mode. The radio must receive on the same frequency as that transmitted by the other radio.

When setting up a channel for ARTS (VFO or memory),

- Enter the receive frequency
- Set the Offset Direction to SIMPLEX,
- Set Tone Mode to DCS,
- Set the DCS code to the same value in each radio.

Besides its value in search and rescue operations, ARTS makes a great "did you hear me" feature. As long as the two radios show "IN RANGE", you can be sure that the radio received your audio . Presuming that the volume on the receiving radio is sufficient, you can be sure that your signal was heard. Especially when driving, the other operator may not be able to respond immediately to your communication. If ARTS remains successful, you can be sure that the voice transmission was heard (just as the ARTS signal is heard).

During the ARTS function, your radio will transmit a signal every 15 (or 25) seconds. This transmission includes the DCS tone. The receiving radio will hear only the signal with the tone. An extraneous signal that lacks the tone will not interfere with the ARTS functionality between these two radios.

The other radio does the same in a comparable time period. As long as the two remain within range, the displays will show "IN RANGE". Should one of the radios move too far from the other, three beeps will sound and the display changes to "OUT RANGE". Once with radios are again within range, a single beep will sound and the display will change to "IN RANGE". Whether or not you talk, the ARTS function continues until you de-activate it.

During ARTS operation, it is impossible to change the operating frequency or other settings of the radio. This prevents accidental loss of contact. You must terminate ARTS operations to resume normal operations including access to menu settings on the radio. The radio can be turned off even with ARTS engaged. This will cause an out-of-range situation for other radios.

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Options for ARTS operations are entered on the General tab of the Settings screen of the programmer. Access this by selecting Settings | Radio Menu Settings from the main page of the programmer. Then select the Common tab once the settings screen opens. Customize the settings. Select File | Save from the menu at the top of the settings screen. Enter a name for the settings file (if you are working in an existing settings file this action will appear to do nothing; but, your changes will be saved. You will not be prompted for another filename.). Click Save. Click File | Exit to close the Settings screen.

The ARTS options include:

- **CW ID** - Transmissions during the ARTS function, whether or not accompanied by voice transmissions, require that you ID every 10 minutes to satisfy FCC identification requirements. This identification can be done manually with verbal ID during a conversation or automatically by the radio with your callsign transmitted via CW. This automatic ID option is especially useful if you are using ARTS without voice transmission. To activate the CW ID, check the box and enter your callsign in the space provided.
- **ARTS Beep** - The ARTS function can operate either silently or audibly. Silently, the display shows the IN RANGE or OUT RANGE condition of the transceivers. The beep alerts you to the location status of the radios. The available options include
    - OFF for silent operations.
    - IN RANGE for a beep only when the radios first confirm that you are within range. The radios then remain silent as long as you remain within range.
    - ALWAYS for a beep to sound every time a polling transmission is received from the other station.
- **ARTS Speed** - Set the frequency for ARTS polling. Available options are 25 seconds for maximum battery conservation or 15 seconds for extra security.
- **ARTS Switch** - Disabled in the programmer, the ARTS functionality is to be turned on from the face of the radio after it is programmed. To engage or disable ARTS, press and hold the "atomic looking" key for one seconds.

Note: ARTS will not function if the PTT is locked.

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To start the ARTS function on the radio, press and hold the [S.SCH(ARTS)] button of the radio for 1/2 second. "OUT.RNG" on the display indicates that the ARTS operation is engaged.

12.1.3 Auto Power Off

Your radio has other menu items that are not associated with each memory channel. These menu items are "global" to the radio's functionality. The radio uses these settings no matter what memory channel you're on, what frequency of operation you're in, if you're in VFO or memory.

If you radio "acts funny" once it is programmed with a file of memory channels, check the settings file to be sure things are set correctly. Then be sure to save the settings file so your personal touches will go to the radio with every file. (File | Save from the menu on the Settings screen). The settings file then works in conjunction with the memory channel file to program your radio.

Band Edge Beep - Enable / disable an audible indication that you have reached the edge of a frequency band when you are tuning the radio with the DIAL knob.

Priority Revert - Enable / disable the Priority Revert Mode. With this mode enabled and Priority Channel Scanning engaged, the radio will move to the Priority channel instantly when the PTT is pressed without having to wait for activity to appear on the Priority channel. More details can be found about Priority Channel Scanning in that section of this help.

Memory Only - Enable / disable Memory Only mode. In Memory Only mode, VFO, Home and Weather channel operations are not available. Also, many of the keys on the face of the radio as disabled. These limitations make the radio simpler to use which can be especially helpful in a setting of multiple operators who may be unfamiliar with this equipment.

Auto Power Off - Set the time after which the transceiver will automatically shut off. Default is Off.

Beep - Enables / disables the beeper for:

Key - The beeper sounds when a key is pressed.

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Key + Scan - The beeper sounds when you press a key or when the scanner stops on an active frequency.

Off - Disables the beeper.

ARTS - These options are described in detail in the Auto Range Transponder System section of this Help along with general information about this function of the radio.

DCS Polarity - The Normal or Inverted setting for DCS coding is set once for the radio to use for all memory channels using a DCS code. For more details on this function, see the section on DCS Code Inversion in this help and in the User's Manual for the radio.

- T/RX Normal - Normal DCS operations for transmit and receive
- RX Reverse - Reverse operations for receive and normal operations for transmit
- TX Reverse - Reverse operations for transmit and normal operations for receive
- T/RX Reverse - Reverse operations for transmit and receive operations. The default is T/RX Normal.

Dimmer - Set the brightness of the front panel display. Select Dim1, Dim2, Dim3 or Off. The default is Dim1.

Hyperwrite - Enables or disables the Automatic Writing feature for the HyperMemory. The radio has hypermemories that store confirmations of the radio. While using your radio if you change bands, memory channels, frequencies, etc, during normal operations, these changes will be lost when you recall another hypermemory unless you save your changes. This process is similar to having to resave a memory channel after changing one characteristic of it. See the details in Hypermemory Programming of this help for how to manually save a hypermemory. The options of this feature help you with this "saving".

- Manual - You must manually re-save any changes made.
- 1-Auto - Enable the automatic Writing feature for Hypermemory 1 only. The changes made while operating in Hypermemory 1 will be saved automatically while those for Hypermemory 2-5 must be handled manually.
- Auto - The Automatic Writing feature is engaged for all Hypermemories.

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Internet - The radio can be used to access the WIRES Internet system. See Internet Function Settings of this Help for details of this functionality and the option settings.

Lock - Select the combination of radio functions that are locked when the lock function is engaged from the face of the radio. Combinations control front panel keys, the tuning dial and the PTT switch. To engage the lock, press and hold the orange button next to the power switch on the face of the radio until the lock symbol appears on the radio's display.

Microphone -Set the microphone type to be used. Values are MH-42 and MH-48. The default is determined by the version of the radio being programmed. You can check the front of the microphone to verify your selection for this setting.

RF Squelch - Adjust the RF squelch threshold level for receive signals. The RF Squelch function allows you to set the squelch so that only signals exceeding a certain S-meter level will open the squelch. Select S-1, S-5, S-9 or S-Full. With a higher setting, only strong signals will be received. The default is Off.

Scan Resume - Selects the Scan Resume mode. Available values are BUSY and TIME as described below. The default is Time

- Busy - The scanner will hold until the signal disappears, then will resume when the carrier drops.
- TIME - The scanner will hold for the five seconds, then resume whether or not the other station is still transmitting.

Smart Search - Set the Smart Search sweep option. Available values are Single and Continuous (as described below). The default is Single.

- Single - The transceiver sweeps the current band once in each direction starting at the current frequency. All channels with activity (up to 15 in each direction) are loaded into the Smart Search memories. Whether or not all the memories are filled, the search is halted after one sweep in each direction.
- Continuous - The transceiver sweeps in each direction starting at the current frequency continuously until all the Smart Search memories are filled.

Time out Timer - Set the maximum time of continuous transmission after which the radio is forced back into receive mode. Available values are 1 to 30 minutes and Off. The default is 6 minutes.

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Programmable Keys

P1/P2/P3/P4 - Default functions of the radio have been assigned to these microphone keys. Shown in the Programmer are the defaults of Band / VFO-MR / Tone / Low (Power setting), respectively. The function of these keys can be changed to:

- ARTS - Activates the ARTS function
- Band - Selects main band of operation: VHF or UHF
- DCSC - Shortcut to Menu item #9 where you can select the DCS code
- Home - Switches frequency to the Home channel
- Low - Sets power output level
- MHz - Enables selection of the "MHz" digit of the frequency
- Priority - Activates Priority Channel monitoring.
- Reverse - Reverses repeater transmit / receive frequencies
- Repeater - Selects repeater shift direction
- Scan - Activate scanning
- SSCH - Activates Smart Search
- Sql Off - Opens the squelch to allow reception or all signals
- T Call - Activates 1750 Hz tone burst
- TN FQ - Access to Menu item 44 where you can select the CTCSS tone frequency
- Tone - Selects the CTCSS or DCS mode and tone/code
- VFO/MR - Switches between VFO and Memory functions
- Weather - Recall the weather broadcast channels.

Prg Panel [Low(ACC)] - Change the function of the radio to be activated when the [Low(ACC)] key is pressed and held. Available functions to be assigned include:

- Weather - Recall the weather broadcast channels.

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- Reverse - Reverses repeater transmit / receive frequencies
- Repeater - Selects repeater shift direction
- Squelch Off - Opens the squelch to allow reception or all signals
- Lock - Shortcut to Menu item #21 which selects the key locking scheme.
- Dimmer - Sets the display brightness.

12.1.6 DCS Code Inversion

The DCS system was first introduced in the commercial LMR (Land Mobile Radio) service, where it is now in widespread use. DCS is sometime referred to by its different proprietary names, such as DPL® (Digital Private Line®, a registered trademark of Motorola, Inc.).

DCS uses a codeword consisting of a 23-bit frame, transmitted (subaudible) at a data rate of 134.4 bps (bit/sec). Occasionally, signal inversion can result in the complement of a code being sent or received. This prevents the receiver's squelch from opening with DCS enabled, as the decoded bit sequence would not match that selected for operation.

Typical situations that might cause inversion to occur are:

- Connection of an external receiver preamplifier.
- Operating through a repeater.
- Connection of an external linear amplifier.

Note that code inversion does not mean that any of the above listed equipment is defective!

In certain amplifier configurations, the output signal (phase) is inverted from the input. Small signal or power amplifiers having an odd number (1, 3, 5, etc.) of amplification stages may result in inversion of a transmitted or received DCS code. While under most circumstances this should not occur (amplifier designs and industry standards take this into account), if you find that your receiver squelch does not open when both

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you and the other station are using a common DCS code, you or the other station (but not both) can try setting DCS priority to something other than "normal" (RN -TN).

12.1.7 DCS Reverse

Your radio has other menu items that are not associated with each memory channel. These menu items are "global" to the radio's functionality. The radio uses these settings no matter what memory channel you're on, what frequency of operation you're in, if you're in VFO or memory.

If you radio "acts funny" once it is programmed with a file of memory channels, check the settings file to be sure things are set correctly. Then be sure to save the settings file so your personal touches will go to the radio with every file. (File | Save from the menu on the Settings screen). The settings file then works in conjunction with the memory channel file to program your radio.

Band Edge Beep - Enable / disable an audible indication that you have reached the edge of a frequency band when you are tuning the radio with the DIAL knob.

Priority Revert - Enable / disable the Priority Revert Mode. With this mode enabled and Priority Channel Scanning engaged, the radio will move to the Priority channel instantly when the PTT is pressed without having to wait for activity to appear on the Priority channel. More details can be found about Priority Channel Scanning in that section of this help.

Memory Only - Enable / disable Memory Only mode. In Memory Only mode, VFO, Home and Weather channel operations are not available. Also, many of the keys on the face of the radio as disabled. These limitations make the radio simpler to use which can be especially helpful in a setting of multiple operators who may be unfamiliar with this equipment.

Auto Power Off - Set the time after which the transceiver will automatically shut off. Default is Off.

Beep - Enables / disables the beeper for:

Key - The beeper sounds when a key is pressed.

Key + Scan - The beeper sounds when you press a key or when the scanner stops on an active frequency.

Off - Disables the beeper.

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ARTS - These options are described in detail in the Auto Range Transponder System section of this Help along with general information about this function of the radio.

DCS Polarity - The Normal or Inverted setting for DCS coding is set once for the radio to use for all memory channels using a DCS code. For more details on this function, see the section on DCS Code Inversion in this help and in the User's Manual for the radio.

- T/RX Normal - Normal DCS operations for transmit and receive
- RX Reverse - Reverse operations for receive and normal operations for transmit
- TX Reverse - Reverse operations for transmit and normal operations for receive
- T/RX Reverse - Reverse operations for transmit and receive operations. The default is T/RX Normal.

Dimmer - Set the brightness of the front panel display. Select Dim1, Dim2, Dim3 or Off. The default is Dim1.

Hyperwrite - Enables or disables the Automatic Writing feature for the HyperMemory. The radio has hypermemories that store confirmations of the radio. While using your radio if you change bands, memory channels, frequencies, etc, during normal operations, these changes will be lost when you recall another hypermemory unless you save your changes. This process is similar to having to resave a memory channel after changing one characteristic of it. See the details in Hypermemory Programming of this help for how to manually save a hypermemory. The options of this feature help you with this "saving".

- Manual - You must manually re-save any changes made.
- 1-Auto - Enable the automatic Writing feature for Hypermemory 1 only. The changes made while operating in Hypermemory 1 will be saved automatically while those for Hypermemory 2-5 must be handled manually.
- Auto - The Automatic Writing feature is engaged for all Hypermemories.

Internet - The radio can be used to access the WIRES Internet system. See Internet Function Settings of this Help for details of this functionality and the option settings.

Lock - Select the combination of radio functions that are locked when the lock function is engaged from the face of the radio. Combinations control front panel keys, the tuning

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dial and the PTT switch. To engage the lock, press and hold the orange button next to the power switch on the face of the radio until the lock symbol appears on the radio's display.

Microphone -Set the microphone type to be used. Values are MH-42 and MH-48. The default is determined by the version of the radio being programmed. You can check the front of the microphone to verify your selection for this setting.

RF Squelch - Adjust the RF squelch threshold level for receive signals. The RF Squelch function allows you to set the squelch so that only signals exceeding a certain S-meter level will open the squelch. Select S-1, S-5, S-9 or S-Full. With a higher setting, only strong signals will be received. The default is Off.

Scan Resume - Selects the Scan Resume mode. Available values are BUSY and TIME as described below. The default is Time

- Busy - The scanner will hold until the signal disappears, then will resume when the carrier drops.
- TIME - The scanner will hold for the five seconds, then resume whether or not the other station is still transmitting.

Smart Search - Set the Smart Search sweep option. Available values are Single and Continuous (as described below). The default is Single.

- Single - The transceiver sweeps the current band once in each direction starting at the current frequency. All channels with activity (up to 15 in each direction) are loaded into the Smart Search memories. Whether or not all the memories are filled, the search is halted after one sweep in each direction.
- Continuous - The transceiver sweeps in each direction starting at the current frequency continuously until all the Smart Search memories are filled.

Time out Timer - Set the maximum time of continuous transmission after which the radio is forced back into receive mode. Available values are 1 to 30 minutes and Off. The default is 6 minutes.

Programmable Keys

P1/P2/P3/P4 - Default functions of the radio have been assigned to these microphone keys. Shown in the Programmer are the defaults of Band / VFO-MR / Tone / Low (Power setting), respectively. The function of these keys can be

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changed to:

- ARTS - Activates the ARTS function
- Band - Selects main band of operation: VHF or UHF
- DCSC - Shortcut to Menu item #9 where you can select the DCS code
- Home - Switches frequency to the Home channel
- Low - Sets power output level
- MHz - Enables selection of the "MHz" digit of the frequency
- Priority - Activates Priority Channel monitoring.
- Reverse - Reverses repeater transmit / receive frequencies
- Repeater - Selects repeater shift direction
- Scan - Activate scanning
- SSCH - Activates Smart Search
- Sql Off - Opens the squelch to allow reception or all signals
- T Call - Activates 1750 Hz tone burst
- TN FQ - Access to Menu item 44 where you can select the CTCSS tone frequency
- Tone - Selects the CTCSS or DCS mode and tone/code
- VFO/MR - Switches between VFO and Memory functions
- Weather - Recall the weather broadcast channels.

Prg Panel [Low(ACC)] - Change the function of the radio to be activated when the [Low(ACC)] key is pressed and held. Available functions to be assigned include:

- Weather - Recall the weather broadcast channels.
- Reverse - Reverses repeater transmit / receive frequencies
- Repeater - Selects repeater shift direction

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- Squelch Off - Opens the squelch to allow reception or all signals
- Lock - Shortcut to Menu item #21 which selects the key locking scheme.
- Dimmer - Sets the display brightness.

12.1.10 Internet Function Settings

The radio can be used to access a "node" (repeater or base station) which is tied into the Vertex Standard WIRES™ (Wide-Coverage Internet Repeater Enhancement System) network, operating in the "SRG" (Sister Radio Group) mode.

Details may be found at the WIRES-II Web site: www.vxstd.com/en/wiresinfo-en/

Settings for Internet Access

- Mode - Select the Internet Link Connection mode.
- DTMF Digit: Select the Access Number (DTMF digit) for WIRESTM operation. Available values are CODE 0 - CODE 9. The default is CODE 1
- DTMF CH#: Select the autodial memory location into which the Internet Link System access was stored.

Note: If other users report that you always have a DTMF "beep" at the beginning of each transmission, and you are not operating in conjunction with Internet access, disable the Internet access feature from the face of the radio by holding the [⊠] button. The icon that indicates use of this feature will disappear from the screen once the feature is disabled.

12.1.11 Lock

Your radio has other menu items that are not associated with each memory channel.

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These menu items are "global" to the radio's functionality. The radio uses these settings no matter what memory channel you're on, what frequency of operation you're in, if you're in VFO or memory.

If you radio "acts funny" once it is programmed with a file of memory channels, check the settings file to be sure things are set correctly. Then be sure to save the settings file so your personal touches will go to the radio with every file. (File | Save from the menu on the Settings screen). The settings file then works in conjunction with the memory channel file to program your radio.

Band Edge Beep - Enable / disable an audible indication that you have reached the edge of a frequency band when you are tuning the radio with the DIAL knob.

Priority Revert - Enable / disable the Priority Revert Mode. With this mode enabled and Priority Channel Scanning engaged, the radio will move to the Priority channel instantly when the PTT is pressed without having to wait for activity to appear on the Priority channel. More details can be found about Priority Channel Scanning in that section of this help.

Memory Only - Enable / disable Memory Only mode. In Memory Only mode, VFO, Home and Weather channel operations are not available. Also, many of the keys on the face of the radio as disabled. These limitations make the radio simpler to use which can be especially helpful in a setting of multiple operators who may be unfamiliar with this equipment.

Auto Power Off - Set the time after which the transceiver will automatically shut off. Default is Off.

Beep - Enables / disables the beeper for:

Key - The beeper sounds when a key is pressed.

Key + Scan - The beeper sounds when you press a key or when the scanner stops on an active frequency.

Off - Disables the beeper.

ARTS - These options are described in detail in the Auto Range Transponder System section of this Help along with general information about this function of the radio.

DCS Polarity - The Normal or Inverted setting for DCS coding is set once for the radio to use for all memory channels using a DCS code. For more details on this function, see the section on DCS Code Inversion in this help and in the User's Manual for the radio.

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- T/RX Normal - Normal DCS operations for transmit and receive
- RX Reverse - Reverse operations for receive and normal operations for transmit
- TX Reverse - Reverse operations for transmit and normal operations for receive
- T/RX Reverse - Reverse operations for transmit and receive operations. The default is T/RX Normal.

Dimmer - Set the brightness of the front panel display. Select Dim1, Dim2, Dim3 or Off. The default is Dim1.

Hyperwrite - Enables or disables the Automatic Writing feature for the HyperMemory. The radio has hypermemories that store confirmations of the radio. While using your radio if you change bands, memory channels, frequencies, etc, during normal operations, these changes will be lost when you recall another hypermemory unless you save your changes. This process is similar to having to resave a memory channel after changing one characteristic of it. See the details in Hypermemory Programming of this help for how to manually save a hypermemory. The options of this feature help you with this "saving".

- Manual - You must manually re-save any changes made.
- 1-Auto - Enable the automatic Writing feature for Hypermemory 1 only. The changes made while operating in Hypermemory 1 will be saved automatically while those for Hypermemory 2-5 must be handled manually.
- Auto - The Automatic Writing feature is engaged for all Hypermemories.

Internet - The radio can be used to access the WIRES Internet system. See Internet Function Settings of this Help for details of this functionality and the option settings.

Lock - Select the combination of radio functions that are locked when the lock function is engaged from the face of the radio. Combinations control front panel keys, the tuning dial and the PTT switch. To engage the lock, press and hold the orange button next to the power switch on the face of the radio until the lock symbol appears on the radio's display.

Microphone -Set the microphone type to be used. Values are MH-42 and MH-48. The default is determined by the version of the radio being programmed. You can check the front of the microphone to verify your selection for this setting.

RF Squelch - Adjust the RF squelch threshold level for receive signals. The RF

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Squelch function allows you to set the squelch so that only signals exceeding a certain S-meter level will open the squelch. Select S-1, S-5, S-9 or S-Full. With a higher setting, only strong signals will be received. The default is Off.

Scan Resume - Selects the Scan Resume mode. Available values are BUSY and TIME as described below. The default is Time

- Busy - The scanner will hold until the signal disappears, then will resume when the carrier drops.
- TIME - The scanner will hold for the five seconds, then resume whether or not the other station is still transmitting.

Smart Search - Set the Smart Search sweep option. Available values are Single and Continuous (as described below). The default is Single.

- Single - The transceiver sweeps the current band once in each direction starting at the current frequency. All channels with activity (up to 15 in each direction) are loaded into the Smart Search memories. Whether or not all the memories are filled, the search is halted after one sweep in each direction.
- Continuous - The transceiver sweeps in each direction starting at the current frequency continuously until all the Smart Search memories are filled.

Time out Timer - Set the maximum time of continuous transmission after which the radio is forced back into receive mode. Available values are 1 to 30 minutes and Off. The default is 6 minutes.

Programmable Keys

P1/P2/P3/P4 - Default functions of the radio have been assigned to these microphone keys. Shown in the Programmer are the defaults of Band / VFO-MR / Tone / Low (Power setting), respectively. The function of these keys can be changed to:

- ARTS - Activates the ARTS function
- Band - Selects main band of operation: VHF or UHF
- DCSC - Shortcut to Menu item #9 where you can select the DCS code
- Home - Switches frequency to the Home channel

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- Low - Sets power output level
- MHz - Enables selection of the "MHz" digit of the frequency
- Priority - Activates Priority Channel monitoring.
- Reverse - Reverses repeater transmit / receive frequencies
- Repeater - Selects repeater shift direction
- Scan - Activate scanning
- SSCH - Activates Smart Search
- Sql Off - Opens the squelch to allow reception or all signals
- T Call - Activates 1750 Hz tone burst
- TN FQ - Access to Menu item 44 where you can select the CTCSS tone frequency
- Tone - Selects the CTCSS or DCS mode and tone/code
- VFO/MR - Switches between VFO and Memory functions
- Weather - Recall the weather broadcast channels.

Prg Panel [Low(ACC)] - Change the function of the radio to be activated when the [Low(ACC)] key is pressed and held. Available functions to be assigned include:

- Weather - Recall the weather broadcast channels.
- Reverse - Reverses repeater transmit / receive frequencies
- Repeater - Selects repeater shift direction
- Squelch Off - Opens the squelch to allow reception or all signals
- Lock - Shortcut to Menu item #21 which selects the key locking scheme.
- Dimmer - Sets the display brightness.

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12.2 Radio Menu Settings - DTMF

The 16-button keypad allows easy DTMF dialing for Autopatch, repeater control, or Internet-link access purposes. Besides numerical digits [0] through [9], the keypad includes the [*] and [#] digits, plus the [A], [B], [C], and [D] tones often used for repeater control.

DTMF Autodial memories are provided, allowing you to store telephone numbers for autopatch use. You can also store short autopatch or Internet-link access code streams so as to avoid having to send them manually.

Entering DTMF Details

- Access the DTMF screen via Settings | Radio Menu Settings. Select the DTMF tab on the Menu Settings screen that opens.
- The tones that will be transmitted are entered into the DTMF fields numbered 1-9. Allowable characters are 0-9, A, B, C, D, *, # and space (for a pause).

12.3 Priority Channel Scanning

Priority Channel Scanning is often referred to as Dual Watch. This two channel scanning ability allows you to operate in VFO, Home, Memory or Weather Channel mode while monitoring for activity on a particular memory channel.

The setup for each of these is a little different and must be done from the face of the radio. Through the designated keystrokes, the radio knows which is your priority channel and the Priority Channel Scanning has been engaged.

Use the programmer to enter the memory channel information. Any memory channel can be used as the priority channel for VFO, Home or Weather Channel priority scanning. For Memory priority scanning the radio uses channel 1 as the priority channel. ***Note: If you're operating in Bank mode, the lowest channel in the bank is used as the priority channel for Memory priority scanning.***

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To engage VFO, Home or Weather channel priority scanning,

- From the face of the radio, tune to the memory channel you want to use as the priority channel.
- Press the [V/M (MW)] key to access VFO or Home mode or press and hold the [LOW (ACC)] key to access the weather channels.
- Press and hold the [MHz(PRI)] key for until "PRI" appears on the screen. The "PRI" indicates that priority scanning has been activated.
- Watch the face of the radio for a moment. You will see the display change as the radio checks periodically for activity on the priority channel.

To engage Memory channel priority scanning,

- From the face of the radio, tune to a channel other than channel 1. The radio will use channel 1 as the priority channel. .
- Press and hold the [MHz(PRI)] key for until "PRI" appears on the screen. The "PRI" indicates that priority scanning has been activated.
- Watch the face of the radio for a moment. You will see the display change as the radio checks periodically for activity on the priority channel.

To disable priority channel scanning,

- Press and hold the [MHz(PRI)] key for until "PRI" disappears from the screen.
- Watch the face of the radio for a moment. You will see that the display no longer changes.

12.4 Internet / Wires

The radio can be used to access a "node" (repeater or base station) which is tied into the Vertex Standard WIRES™ (Wide-Coverage Internet Repeater Enhancement System) network, operating in the "SRG" (Sister Radio Group) mode.

Details may be found at the WIRES-II Web site: www.vxstd.com/en/wiresinfo-en/

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Settings for Internet Access

- Mode - Select the Internet Link Connection mode.
- DTMF Digit: Select the Access Number (DTMF digit) for WIRESTM operation. Available values are CODE 0 - CODE 9. The default is CODE 1
- DTMF CH#: Select the autodial memory location into which the Internet Link System access was stored.

Note: If other users report that you always have a DTMF "beep" at the beginning of each transmission, and you are not operating in conjunction with Internet access, disable the Internet access feature from the face of the radio by holding the [⊠] button. The icon that indicates use of this feature will disappear from the screen once the feature is disabled.

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Part XIII

13 Radio / Computer data transfer

Data flow two ways: from the computer to the radio or from the radio to the computer. Even when you are sending a file to the radio, some data must be sent from the radio to the computer to ensure that the two are "talking" before transfer of the file ever gets started.

In all cases, ***be sure to follow the directions presented on the screen carefully***. The wrong button press can result in a failure to transfer the data.

Details for this process are contained in these sections:

Communications | Get data from - Always the best place to start. Even if there is nothing in your radio. It gets the data "flowing" between the two.

Communications | Send data to - This process programs the radio with the details of the file that is on the screen. If the file is blank, you will have a blank radio. Be sure you see your frequencies on the screen before you start this part of the process.

Radio to computer cabling - Check the photos to be sure you are using the correct cabling for your radio.

Comport Setup - The *RT Systems*' Version 4 programmer does not have comport setup. The program finds the USB cable automatically. This section contains some troubleshooting details that you might find helpful.

13.1 Communications | Get data from

Uploads the contents of the radio memory to the computer. This function is often referred to as "reading" the radio since memory information is "read" from the radio.

The radio must be connected to the computer with the cables that address its specific programming jack. Those cables are

The USB-29B, Cloning Interface Cable with the 6-pin mini din connector at the radio end will be attached to the data jack on the back of the radio. Details of that cabling can be seen in the Radio to Computer Cabling section of this help.

Be sure the radio is connected to a power source. A minimal source is required to

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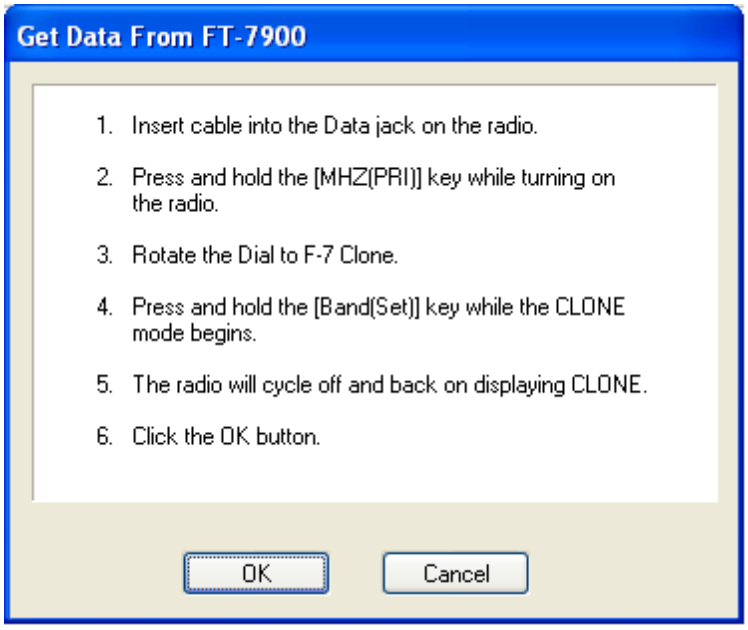
power the radio since you will not be transmitting during this process. Loss of power during programmer could result in a reset radio.

This process is completed in two parts.

- The first screen that opens has details for putting the radio into Clone mode. The screen shown in the help serves as an example.

Read the screen carefully. The steps to put the radio into clone mode differ with each model. Pressing the wrong button will result in no response or the wrong response for the process.



- On the FT-7900 when you press the [MHz(PRI)] key while turning on the radio, you enter a start up menu. When you turn the knob to Clone Start you are not yet in clone mode. You are in the selection of the start up menu.
- When you press the Set key, the radio will cycle off then back on. The display will change to CLONE. Now you are in clone mode ready to address the radio.
- Once the radio is in CLONE mode, click OK on the computer to continue this process.

- A second window opens with the last instruction for the process.

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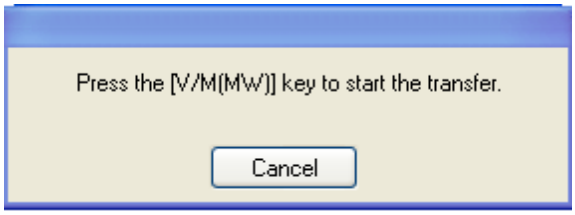
Read the screen carefully. The steps to put the radio into clone mode differ with each model. Pressing the wrong button will result in no response or the wrong response for the process.



- A transfer status bar is displayed on the computer immediately to let you know that the computer is receiving the data being sent from the radio. If the "blue bar" does not appear and fill, cancel the process and try again.

When the Get data from process is complete, the Programmer will return to the spreadsheet of the main window where the information taken from the radio is displayed. This information is ready to be edited and saved.

The radio can remain connected to the computer while changes are being made in the programmer. These changes are not reflected in the radio until you complete the Send data to process in the programmer.

If you are doing major editing, turn the radio off and remove the cloning cable. Then return to the programmer for editing the file. Once your editing is complete, connect the radio to the computer and complete the Send data to process to transfer the changes to the radio.

Troubleshooting

Using the *RT Systems'* software and new USB cable there is really only one error that you may see occasionally when transferring data to or from the radio.

Once you click OK on the first "Get data from" screen, the following window may appear indicating a communications error.

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- Click OK and attach the correct cable. Then try the process again.
- Be sure you are using the *RT Systems'* USB-29B cable or an original CT-29B serial cable with the RTS-03 USB to serial adapter. The Version 4 program will work with no other USB or serial cable.
- Be sure to wait long enough for Windows to acknowledge the cable and let you know that your hardware is attached and ready to use.

Should the problem persist, *contact RT Systems* tech support for assistance.

13.2 Communications | Send Data to

Sends the contents of the current file and the settings file to the radio.

Note: In the Version 4 Programmers you can have files open for several different radios at one time. The Programmer can send a file only to the radio it is for. The extension of the file tells you which radio it is for.

You can open and send a file created for one radio to another; however, you must open that file as one for the receiving radio. See the File | Open section of this Help for details on this process.

Current File

The Programmer can work with several radio files at one time. There is no need to close extra files before executing the Send data to process.

The current file will be sent to the radio during the Send Data To process. The current file is the one that appears in the main window of the Programmer. Basically, what you see on the screen is what is sent to the radio.

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Settings File

Check your global menu settings under Settings | Radio Global Settings (View | Settings in earlier versions of the programmer) to be sure the right information is being sent. The items on this screen are the radio settings that are not associated with a specific memory channel.

These settings are set once to be sent to the radio with any file that you create. Details on these settings can be found in the Radio Settings Options of this Help.

If the radio "acts funny" after it is programmed, check the Radio Global Settings.

- Make changes to the settings as needed.
- Save the settings file.
- Do Communications | Send data to with the same memory channel file.
- The settings will be sent with the memory data.

Completing the Send data to Process

When you execute the Radio | Send data to command, you are presented with instruction for putting the radio into clone mode.

Read the screen carefully. The steps to put the radio into clone mode differ with each model. Pressing the wrong button will result in no response or the wrong response for the process.

Follow the steps on this screen. When you click OK a progress bar appears letting you know that the process is being completed.

When the transfer is complete, the transfer status window disappears and the Programmer returns to the Main Window.

With the radio off, remove the cloning cable. The radio is ready to power-up and use with the newly programmed settings.

Note: The radio may be in VFO mode even after it is programmed. This is a normal mode of the radio and the one you found it in the first time you turned it on.

If the radio did not report an error and the "blue bar" filled without

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error during the Send data to process, the radio is programmed. Follow the steps described in the user's manual for the radio to put the radio into Memory mode (generally pressing an MR, V/M or D/MR button on the face of the radio). Once in Memory mode you will see the channels programmed into the radio.

Troubleshooting details can be found in the ***Troubleshooting*** section of this Help. If necessary contact ***RT Systems*** for assistance.

13.3 Radio to Computer Cabling

The radio must be connected to the computer with the proper cable. The Version 4 programmer will work only with the RT Systems USB-29B or the original serial cable plus the RTS-03 USB to serial adapter. No other USB cable or USB adapter with the serial cable will work with the Version 4 software.

The cable connects from a USB port on the computer to the data jack on the back of the radio.

13.4 Comport Setup

In the Version 4 *RT Systems'* Programmers there is ***NO*** comport setup. The software finds the USB cable automatically.

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Troubleshooting

When I select Communications | Send data to, I get the following error:

The only cable configurations that work with the Version 4 *RT Systems'* Programmers are

- The *RT Systems'* USB cable; or
- The *RT Systems'* original serial cable connected to the computer via the RTS-03 USB to serial adapter.

Be sure to give the computer enough time to do its internal setup once the cable is attached. On some machines this can take up to a minute (a long time in computer time). Once the cable is ready for use, the program will continue into the steps for transferring data between the radio and the computer.

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Part

14 File Maintenance

Just as in a word process or other Windows based program, you will create files in the programmer for use in the radio. You can create as many files as the space on your hard drive will allow.

Remember, with the exception of the Icom IC-7000, all other programmers erase everything in the radio and replace it with what is in the file. Be sure everything you want in the radio is in the file that is sent. This is an "all or nothing" process.

From the File menu at the top of the main window, select:

New - Create a new file in any Version 3 programmer you have installed.

Open - Open an existing file in any of the Version 3 programmers you have installed.

Open Travel Plus Link - Active only if a list is open in Travel Plus. Accesses that Travel Plus list. Details on this functionality are available in the ARRL Travel Plus section of the help.

Close - Closes the current file.

Save - Saves the current file.

Save As - Saves the current file giving you the opportunity to enter a new name. This creates a copy of the file and saves it with the new name you entered.

Import - Advanced functionality that addresses data from a "flat" ASCII file. Details on this process are found in the Import and Export section of the help.

Export - Extracts data from the programmer file to a "flat" ASCII file. Details on this process are found in the Import and Export section of the help.

Print Preview - Lets you see the formatted information on the screen before it prints.

Print - Prints the current file

Send File as E-mail - Sends the current file to *RT Systems'* tech support. This functionality is dependant on the e-mail program of your computer.

Files 1-4 - Up to four files that you last worked in and saved.

Exit - Closes the programmer.

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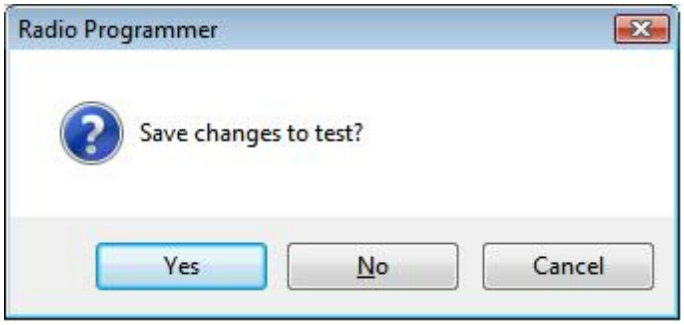
14.1 File | Exit

Exits the Programmer.

If files have been changed, you will be prompted to save or cancel the Exit command to avoid data loss in that file.



Yes - Exits the program saving the file.

No - Exits the program without saving any work done in the file since the last time you saved.

Cancel - Halts the Exit option. The program returns to the open file.

14.2 File | New

Use this command for setting up a "clean slate" into which you enter memory frequencies. A "clean slate" or default file will often have at least one channel programmed on the memory channel screen. This is a factory default that is in your radio when it is new. The information for this channel can be changed; however, in most radios, channel 1 must be programmed.

Use the quick key command of Ctrl M for easy access to a new file.

If you have been working to create a file with memory channels, use File | New before using Communications | Get data from to prevent losing all the work you have done in

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this file. The Get data from process will replace the information in the open file with what is in the radio.

Other Radio Menu Settings and a New File

The radio is more than just memory channels. There are features that are controlled once for the radio. They cannot be customized for each memory channel. These features are address in the programmer under Settings | Radio Menu Settings.

The settings for these features that were last saved are use whenever a New file is created. There is no need to reset these features for each new file. If you have not saved a settings file, factory these radio menu items are set to factory defaults(as if you reset your radio).

Note: If you radio "acts funny" after you download to it (i.e., keypad beeps are different, squelch is open, Scan resume settings are changed, etc.,) you have not yet set these options in the Settings portion of the programmer. To make these option settings permanent:

- ***Select Settings | Radio Menu Settings from the menu at the top of the screen.***
- ***Personalize your options just as you did on the radio.***
- ***Select File | Save from the menu on the Settings screen.***
- ***Enter a filename when prompted and click Save.***
- ***Select File | Exit from the menu on the Settings screen.***
- ***You will not have to change these again unless you want them to function differently.***

The settings file will change only if you read from the radio (Communications | Get data from) and send that file back to the radio (Communications | Send data to) without saving the memory information that you retrieved. This is helpful if you are programming a friend's radio in which he has all these options set up as he wants them.

The File|New command can be used to open several new files at once. Memory channel information can be copied between these files (even from V3 to V4), regardless of which radio they are for.

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14.3 File | Open

Just as in a word processor or other Windows programs, the command opens a previously saved file.

You are not limited to one programming file for your radio. Make as many as you want. Then choose the one you want when you open the programmer.

Working with the programmers is a little different if you have one programmer or several programmers installed on this machine. Click the topic for details on

Opening a file with the Version 3 or Version 4 programmer (One Version 3 or Version 4 programmer installed)

The Version 3 and higher programmers allow you to "share" Version 3 and higher files from other radios...even radios from other manufacturers. Click the topic for details.

Opening ANY Version 3 file

There have been many *RT Systems'* programmers over the years. The Version 3 or higher programmers can open and convert files from those older programmers. Click to topic for details.

Opening existing programming files (*.rdf or *.icf files)

14.3.1 Opening files from older programmers

Opening existing programming files (*.rdf or *.icf files)

The Version 3 or higher programmers can open a file created with an original RT Systems' ADMS or WCS programmer for the same radio.

In this example, a file for the Yaesu FT-60 that was created in the original ADMS-1J programmer (an .rdf file) will be opened in the Version 3 programmer for the FT-60. This process is the same in the Version 4 programmers although the screens will look

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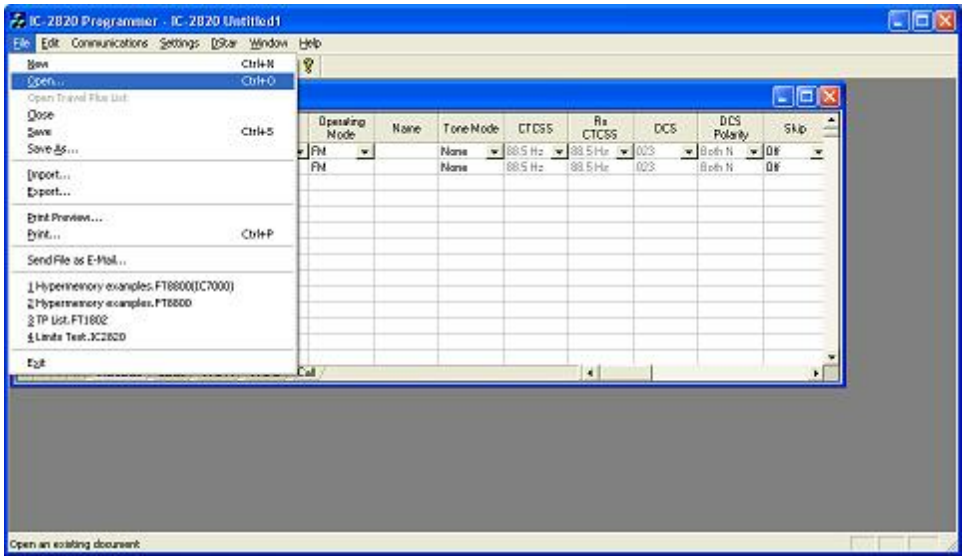
a little different.

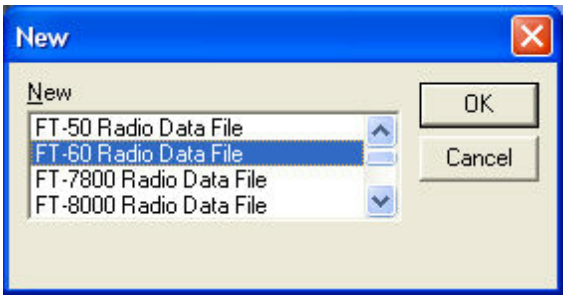
Directory selections may vary on your system depending on your choices in the original programmer. This example is designed based on defaults from the original programmers.

To open an existing file from the original programmer:

- In the V3 Programmer, select File | Open.



- If you have several Version 3 programmers installed, you will need to select FT-60 Radio Data File from the list in box that opens next. This step is omitted if only one programmer is installed.



- An Open Dialog appears

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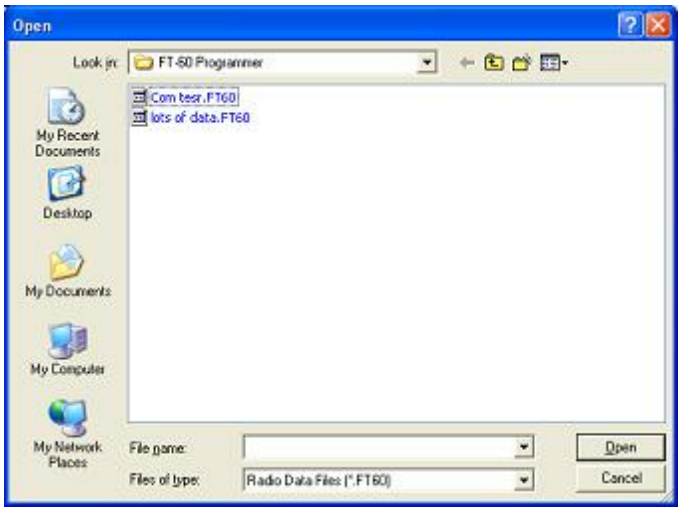
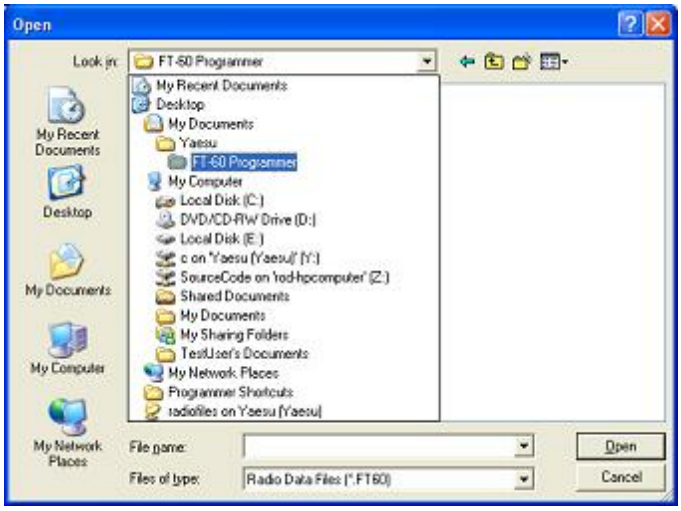


- Since the Version 3 programmer is geared to look in its own directory, we need to "find" the original file to be opened (We must change filing cabinet drawers as the old analogy was described.) Use your mouse to left click the down arrow to the right of the Look In box. A directory listing appears. The one highlighted in the list simply indicates the "drawer" you are in now. Do not be afraid. This is only a list from which we will make a selection. You cannot hurt anything with these steps and actions.



- Use your mouse to left click on Local Disk (C) in the list. On your machine this wording can vary a little. In general, you're looking for that "(C)" to know you've made the correct selection.

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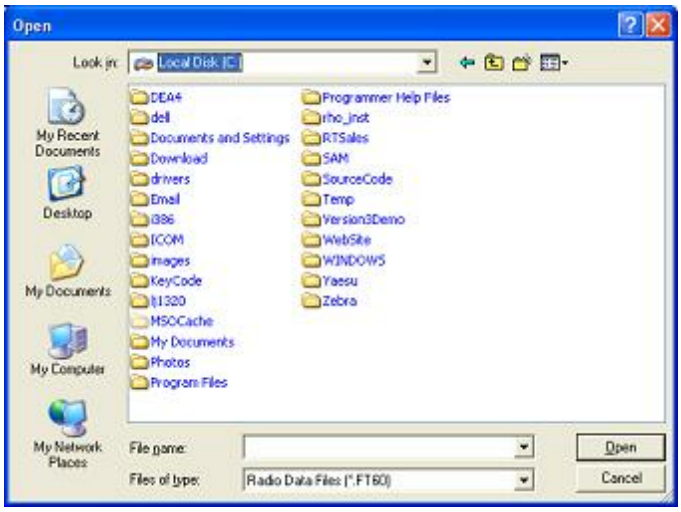
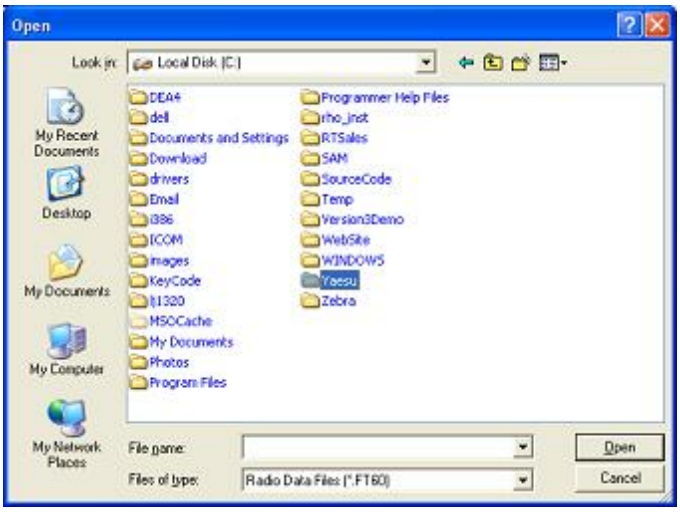


- What you see now are directories (the ones with the little yellow folders) and files. Find the little yellow folder that says Yaesu next to it. Put your mouse on it and Left click. Once Yaesu is highlighted, let go of the mouse button, move the pointer to the Open button, then use your mouse to left click on the Open button.



- After clicking Open, the contents of the Yaesu directory appear.

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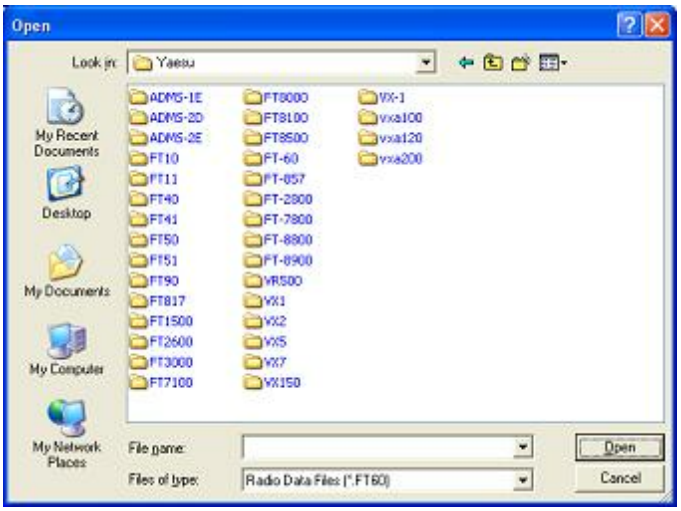
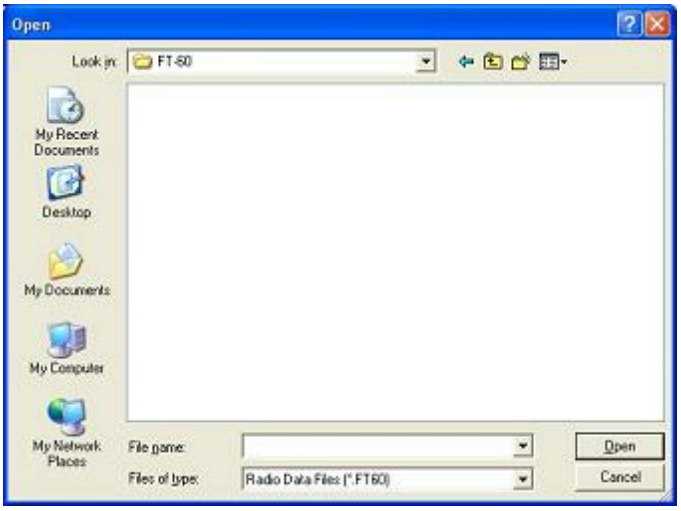


- In this example, there are lots of directories (the ones with the little yellow folders) since all the original programmers were installed on this machine. In your case, there is probably only one directory (little yellow folder). In either case, find the FT-60 directory (the one with the little yellow folder and the words "FT-60" next to it. Find the FT-60 directory. Point at it with your mouse. Use the Left mouse button to click on it. Release the mouse button. Move the pointer to the Open button. Left click the mouse once on the Open button.



- Yes, a blank screen appears. This is normal. At the bottom of that screen, find the "Files of type" box. Use the left mouse button to click on the down arrow at the right of that box. Select Old Radio Files (*.rdf) from that list. The names of the available files will appear on the screen.

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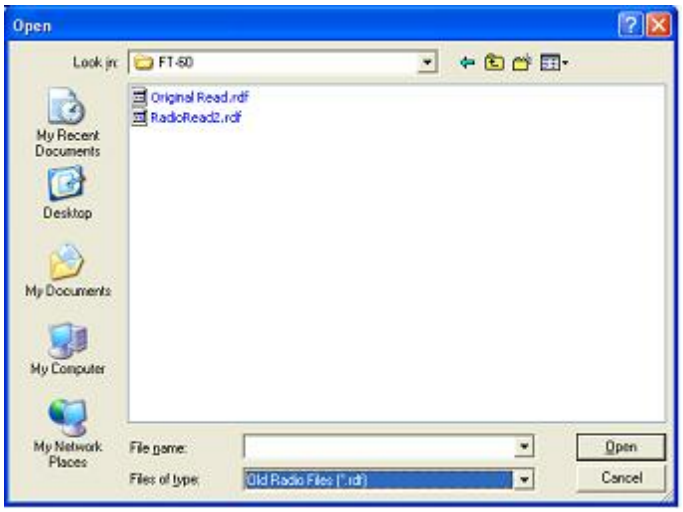
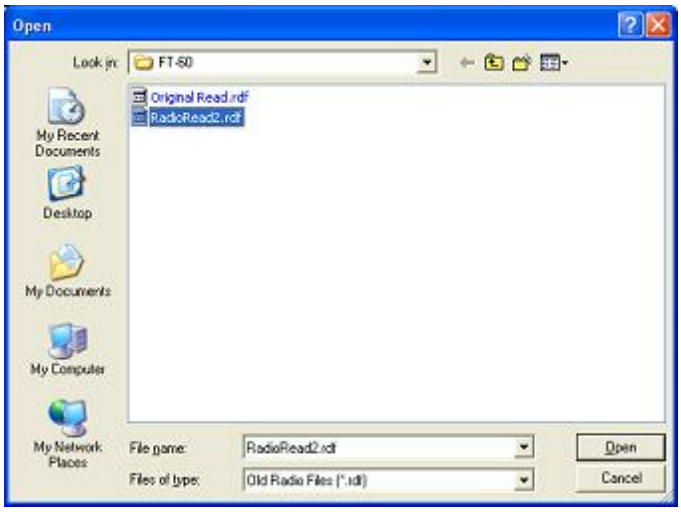


- Use the mouse to point at the name of the file that you want to open. Click the left mouse button once to select that file.



- Release the left mouse button. Move the pointer to Open. Click the left mouse button once to open the file.

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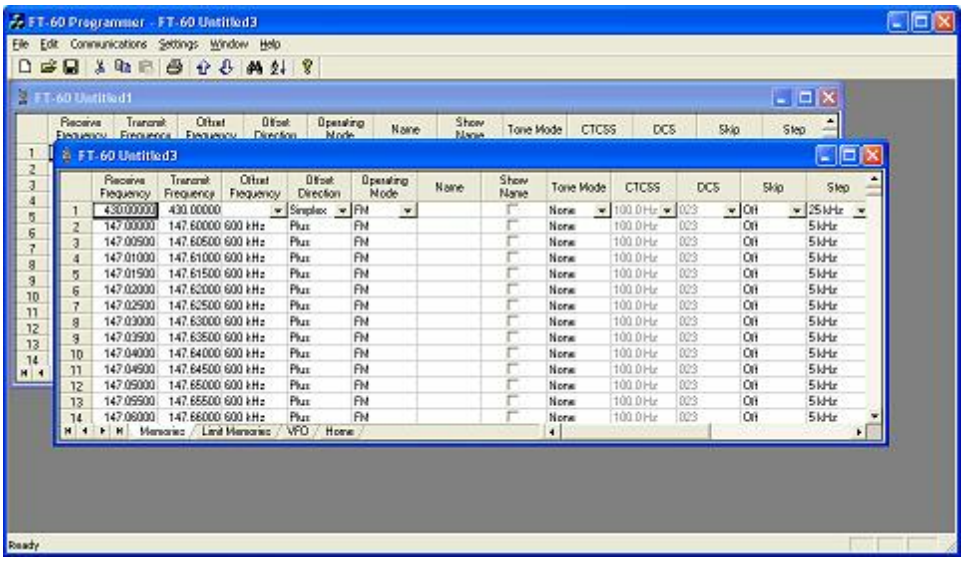
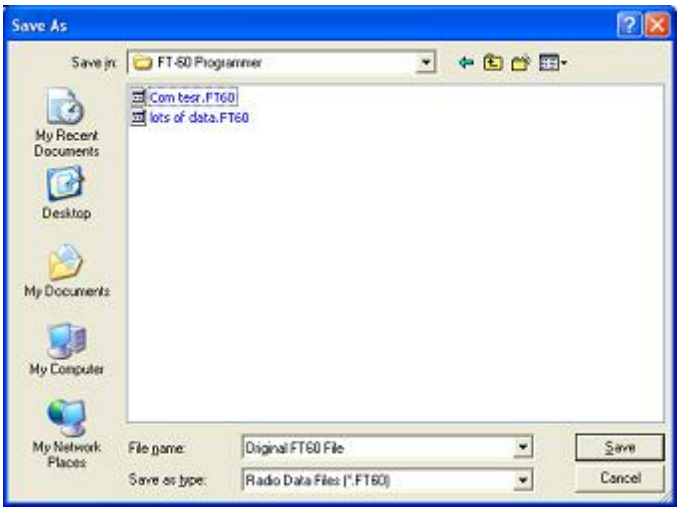


- All the data of the original file is converted into a new Version 3 file for the FT-60.

- Now, save this new file so you don't have to do this again every time. Also, once saved as a new Version 3 file, you can use this data for other radios once you have the Version 3 programmer for them. (Advanced feature explained below). From the menu, select File then Save as from the list. Use the left mouse button to make this selection.



- Enter a filename in the File name field at the bottom of this screen. Use your left mouse button to click Save.

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Note: Only files from the original ADMS-1J for the FT-60 Version 2 programmer can be accessed with the FT-60 Version 3 programmer. Files ending in *.rdf for other Yaesu radios cannot be opened in the FT-60 Version 3 programmer.

14.3.2 Opening a V3 or V4 file from a different radio

The Version 3 programmers have the ability to "share" memory channel information between radios. It makes o difference if the radios are from the same manufacturer or not. As long as both files are from an RT Systems' Version 3 programmers, they can be used by the Version 3 programmer for any other radio.

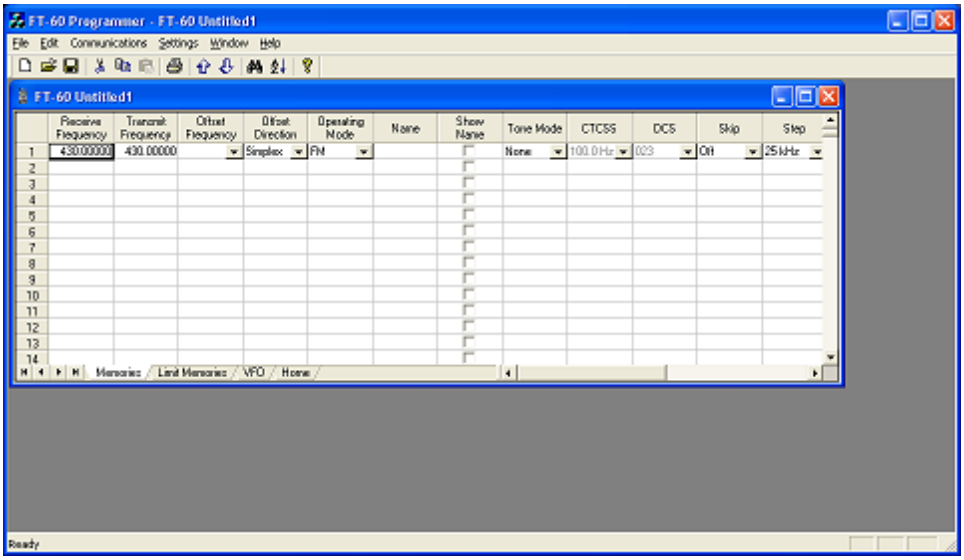
To open a Version 3 file from a different radio:

The steps detailed here are based on the directory structure of this machine. Make changes to directories as needed to locate files that you want to open.

Files that you create in Version 3 can now be shared easily with anyone else who has a Version 3 programmer. Simply post the Version 3 file for anyone to download.

In this example, a file for the Icom IC-T81 will be opened to be sent to the Yaesu FT-60.

- Open the FT-60 Version 3 programmer.



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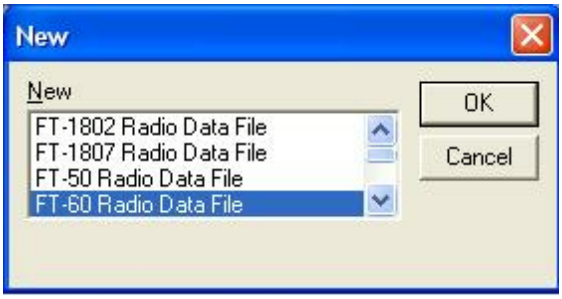
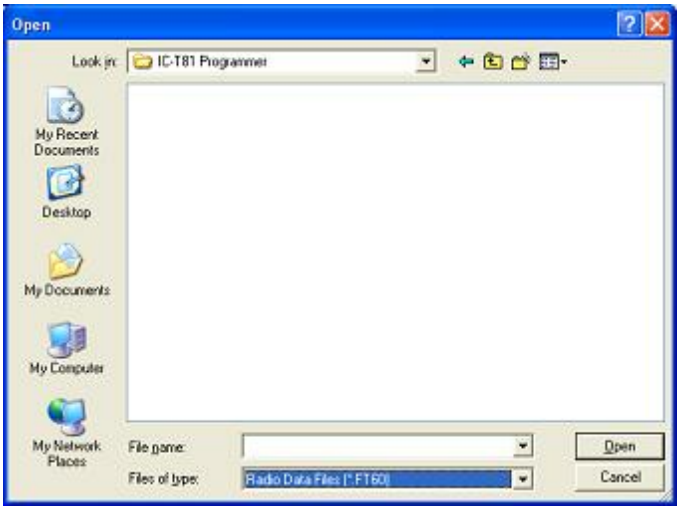
- From the menu at the top of the screen, select File | Open. A box appears from which you select the programmer for the ***radio to be programmed (in this case, the FT-60).***



- An Open Dialog box appears. By default it is looking in the FT-60 directory since it is trying to help you find an FT-60 programming file. You will change directories to where the file is stored that you want to open. (Note: If you received the file via e-mail or from an Internet site, you chose where it was saved. Personalize the steps here to move to that location.)



- When the contents of that directory are displayed, it probably will be blank as shown. You have done nothing wrong. This is normal. The process is still looking for an FT-60 file. From the Files of type field at the bottom of the screen (the one highlighted blue in the figure above), select All files (*.*).

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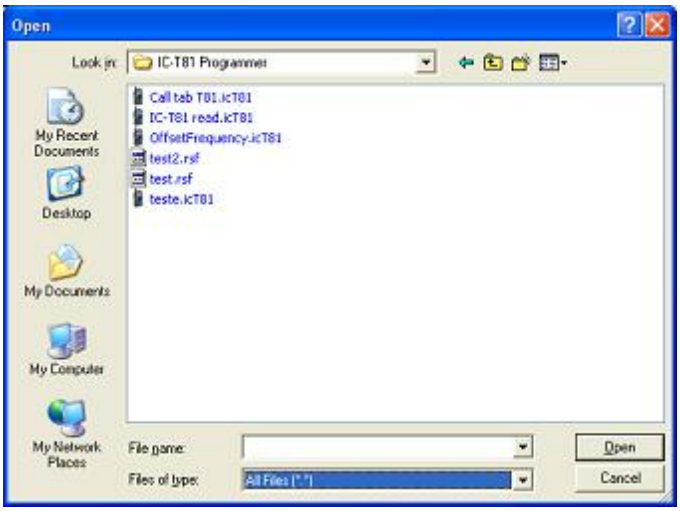
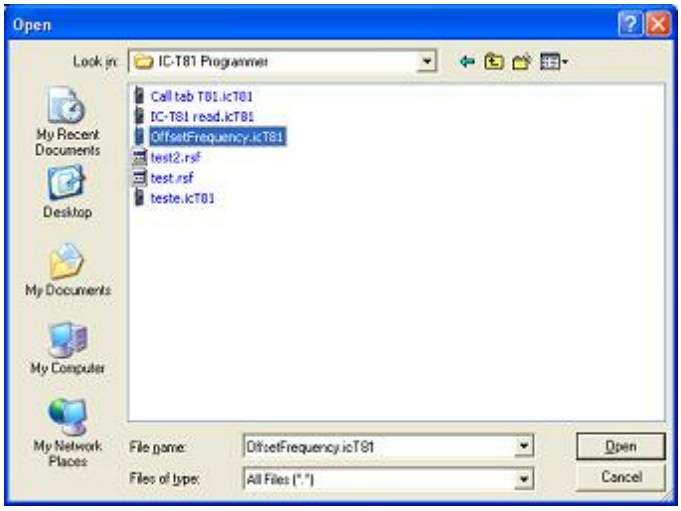


- A listing will appear with more than just the file that you're looking for. Everything in that directory is listed. Your file will be in the list. Select the file from the list.



- Click Open in the lower right corner.

- The resulting file contains frequencies that can be sent to the FT-60. The blanks represent frequencies that were removed during the conversion. These frequencies would be invalid for the FT-60.

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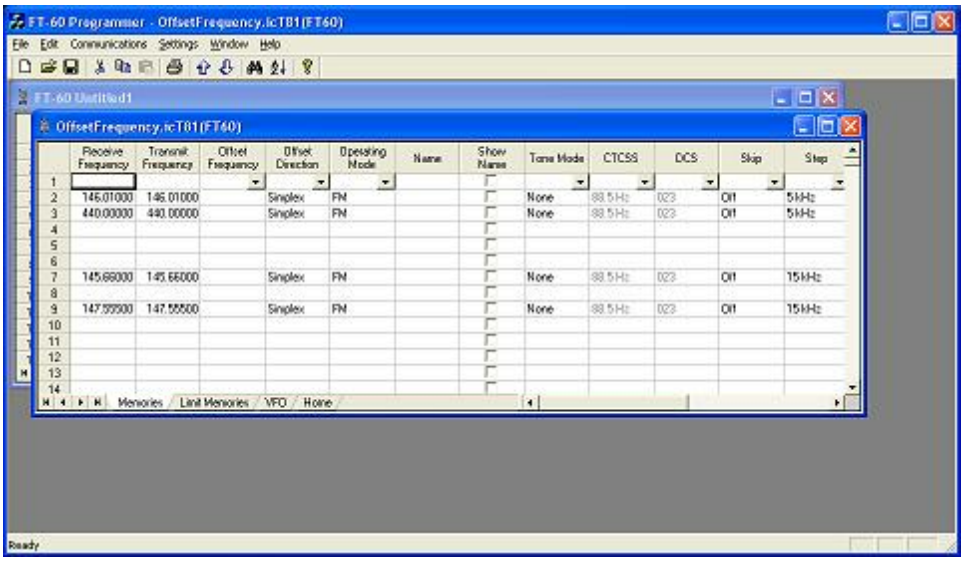

Creation of this file did not disturb the original file. The memory channel information was not removed from the original. A copy was made by the programmer for the conversion.

You can edit the file. In this case it needs to be edited to be sure that memory channel 1 is programmed. You can remove the blank channels if you want. You can add others.

Alternately, you can send this file to the radio just as it is...other than channel 1 needing to be programmed with something allowable for the radio.

Once you have used this to program the FT-60, you can save the file or close without saving depending on your needs for the data.

14.3.3 Opening a V3 or V4 file

Opening a file with the Version 3 programmer (One Version 3 programmer installed)

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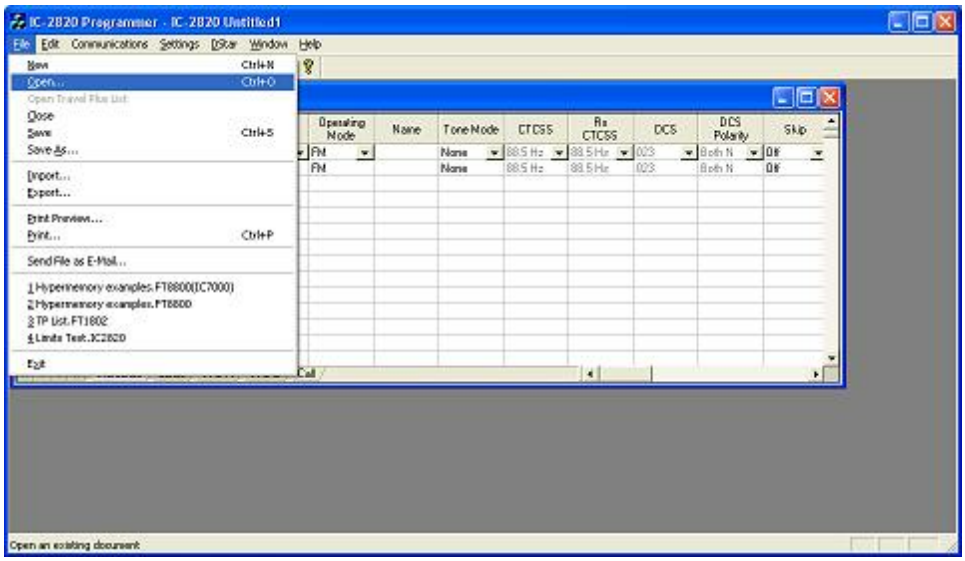
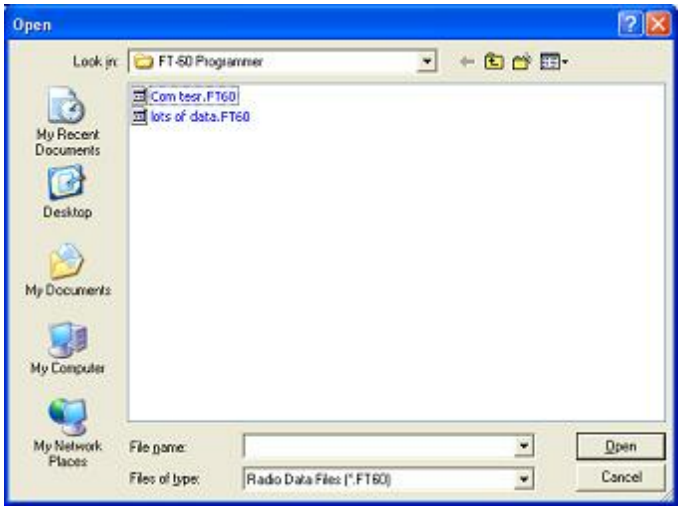
- Select File|Open from the menu at the top of the screen.



- A Windows Open dialog appears.



- Select the file that you want to open from the list presented. Click the Open

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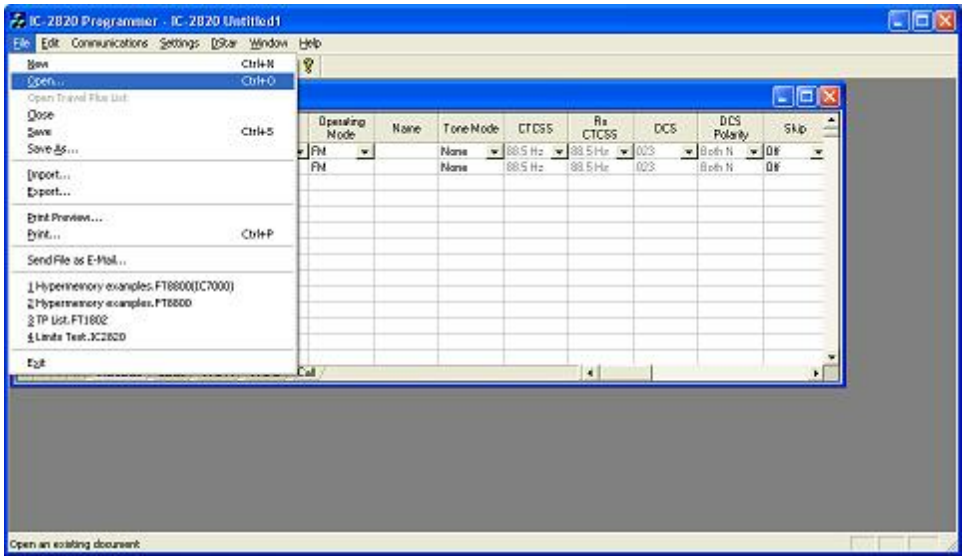
button at the bottom right. This files opens in the programmer.

Opening a file with the Version 3 programmer (More than one Version 3 programmer installed)

- Select File|Open from the menu at the top of the screen.



- A window opens listing the programmers installed on this machine. Select the radio from the list that will be programmed by this file being opened.

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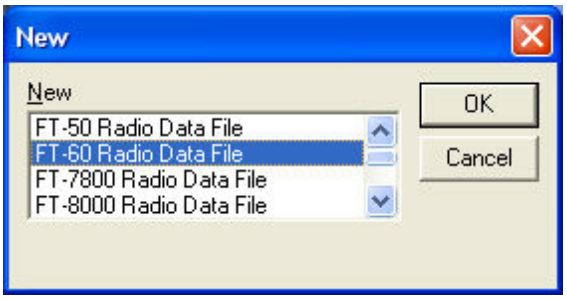
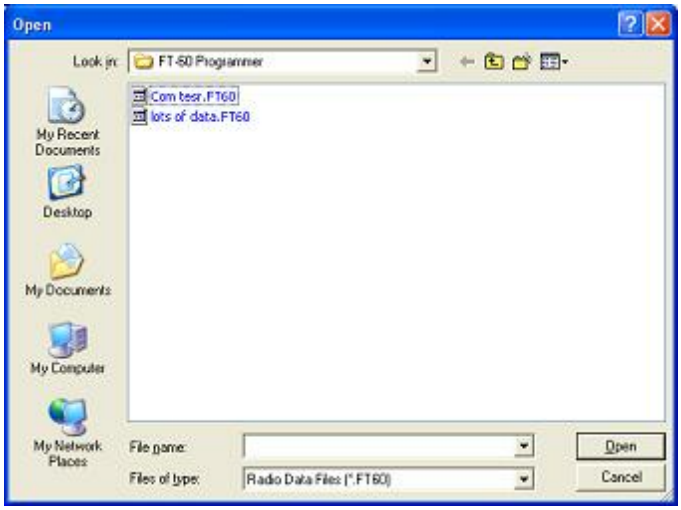


- A Windows Open dialog appears with a list of the files for that radio.



- Select the file that you want to open from the list presented. Click the Open button at the bottom right. This files opens in the programmer.

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14.4 File | Print

Prints the Memory channel information of the displayed page of the current file (i.e., if you are on the memories tab, the memory channel information is printed. Similarly, if you are on the VFO tab, the VFO channel information is printed.)

- When this command is selected, a print dialog will give you the opportunity to setup your printer.
- Hidden columns are not printed. A printout can be customized (including increasing type size) by deliberately hiding columns before printing. To hide column, select Settings | Preferences from the menu of the programmer.
- Only memory channels that are programmed are printed. Your printout will not include the blank channels in the file.
- Use Print Preview to see what your printout will look like and how many pages will be included before you send it to the printer. This new option will help save lots of wasted paper.

14.5 File | Print Preview

This new feature of the Version 3 programmers lets you preview the data to be printed before you waste paper sending it to the printer.
With the file open that you want to print, select File | Print Preview.

You will notice first that the screen changes. It is filled with the data that will be printed. This is just a temporary change. The order of your channels has not been changed in the file.

Then the screen opens to display the printed output you can expect.

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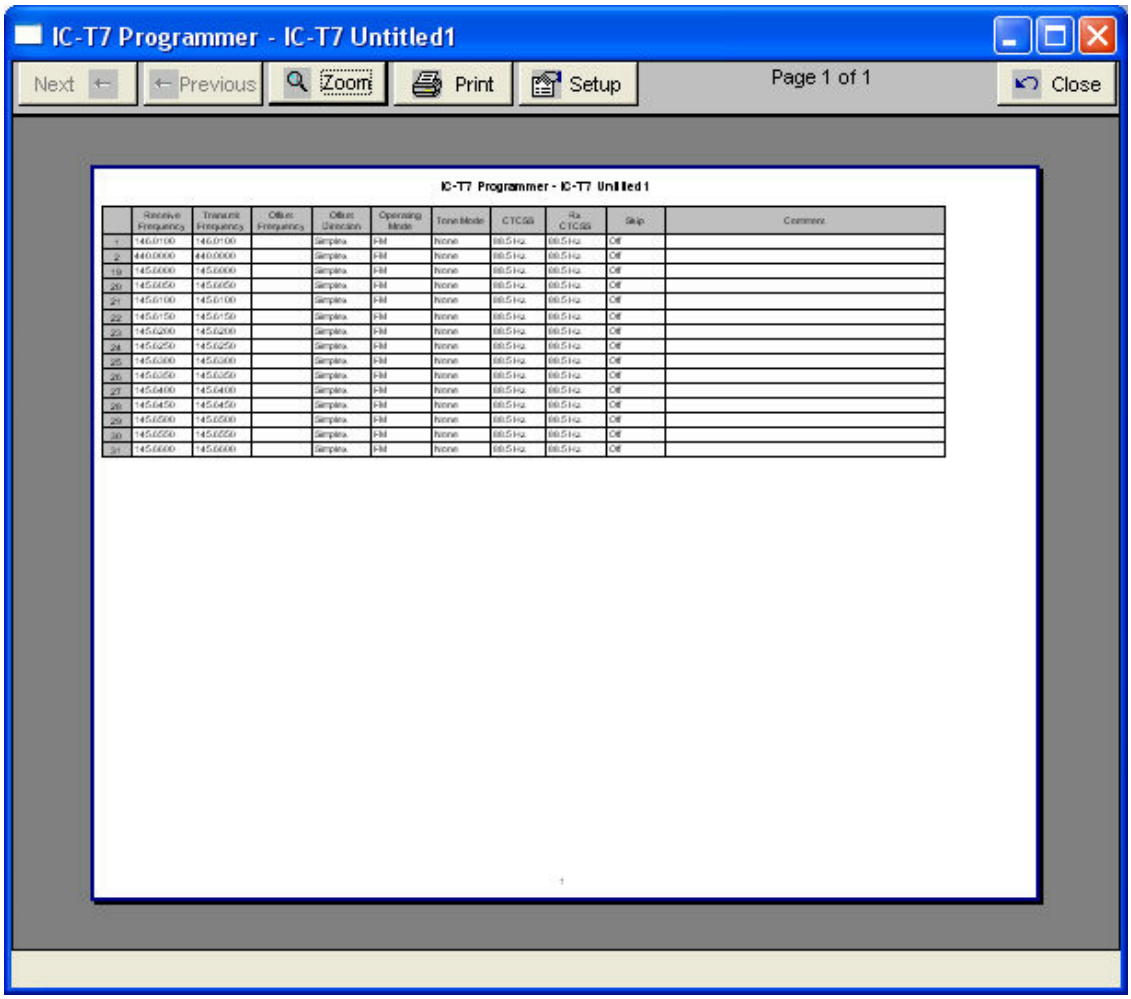

Notice at the top of the page you can see that your have "X of X pages". Making small changes can help reduce this number if it is not as you expect.

For example, reduce the size of the comment column since it is not being used (or hide it completely). This move could save an additional page (or pages) by getting all the columns to fit on one page.

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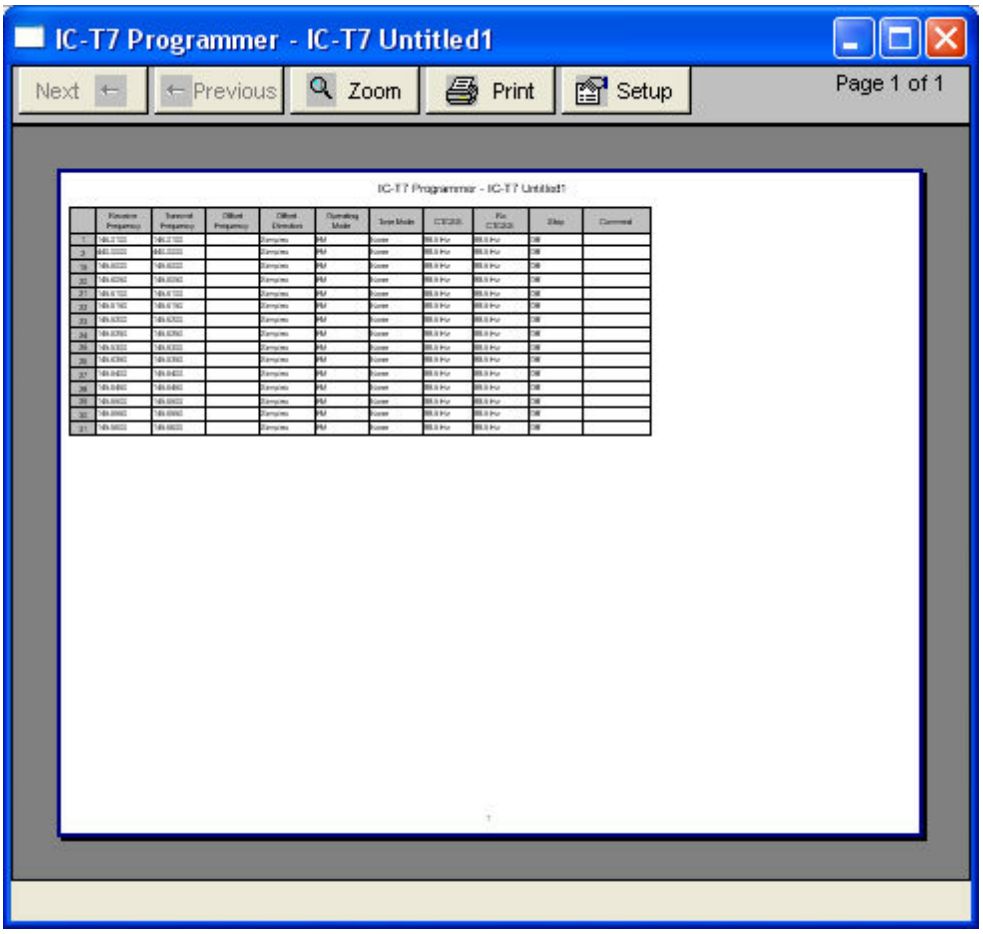

Under Printer setup, change the margins to print on as much of each page of paper as possible. Again, this can make it possible for all the columns to fit on one (or half the number of) page.

Use Zoom to read the data in the preview more easily. Click Zoom again to return to this view.

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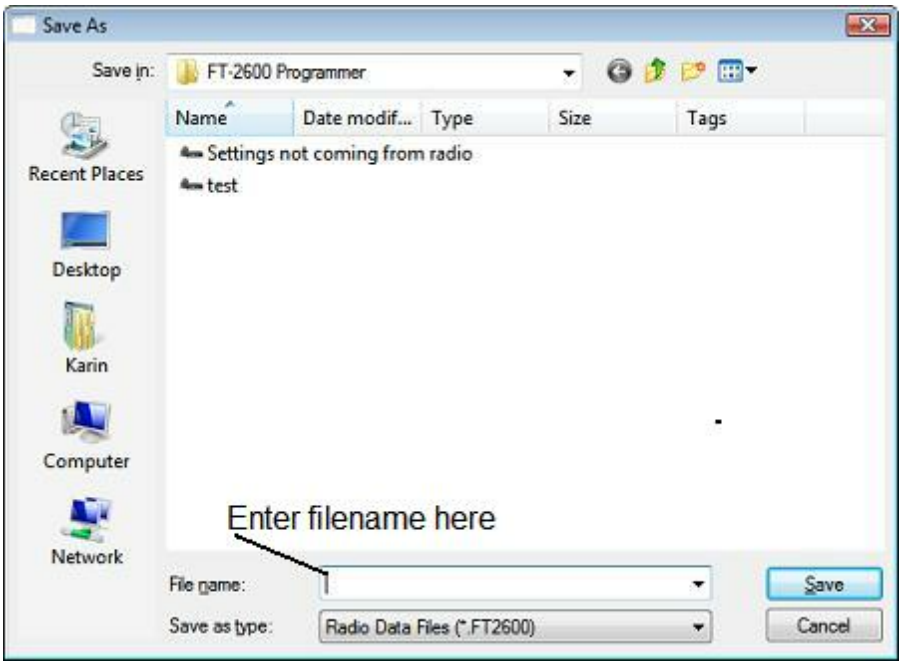
14.6 Saving Programming Files

Many different files can be saved to your hard drive for permanent storage giving you the ability to reprogram your radio quickly and easily to suit your current use.

- Files are saved using the File | Save or File | Save As command.
- When the window opens for the filename, enter any name up to 256 characters (including spaces) but without a period at the end or an extension. The Programmer will enter that information for you automatically.



14.6.1 File | Save

Saves the current file to your computer hard drive.

If several files are open, the current file (the one on top: the one you are working in) is the one that will be saved. Be sure to save the changes to each of the open files before closing the Programmer.

It is recommended that you save the current file during data input and before sending it to the radio. Just as with a word processor, it's an awful shame to lose everything if something happens to the computer during either of these processes.

If the name of the current file is Untitled (in the main window title bar), you will be

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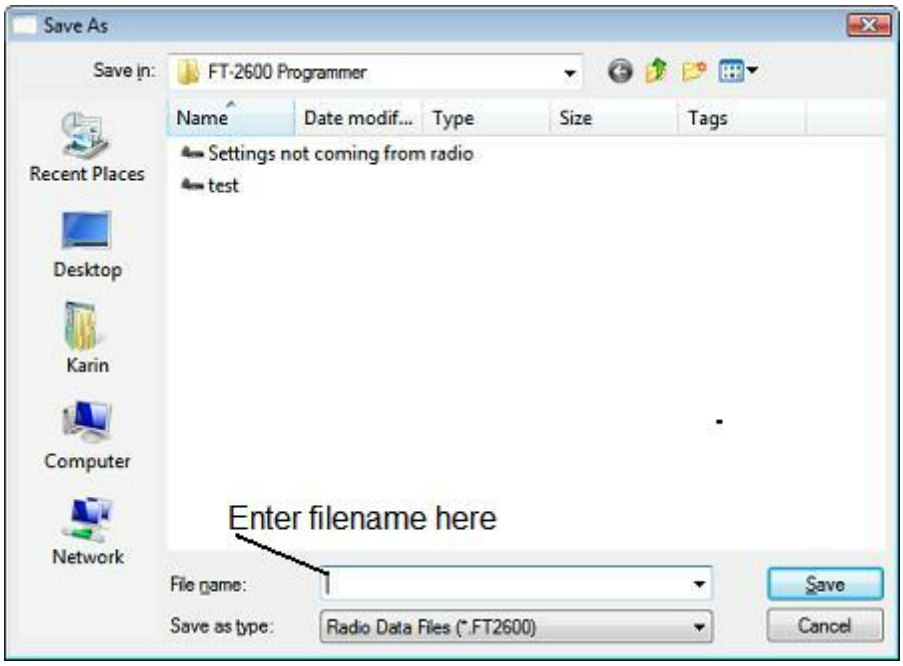
presented with a save file dialog and should enter a new filename.



The filename can be any combination of characters and spaces including numbers and letters.

When saving a file, let the Programmer do the work. All you need to enter is the name you want for the file.

14.6.2 File | Save As

Saves the current file under a new name. Used if you want to make a copy of the file that you're working in to maintain the original without the changes you're making now.

- If several files are open, the one that is active is the current file. This file will be saved with the Save As command.
- This is a good way to start another file for editing. Changes made to this file do not affect the data in the original file.
- When this command is selected, a save file dialog containing a list of

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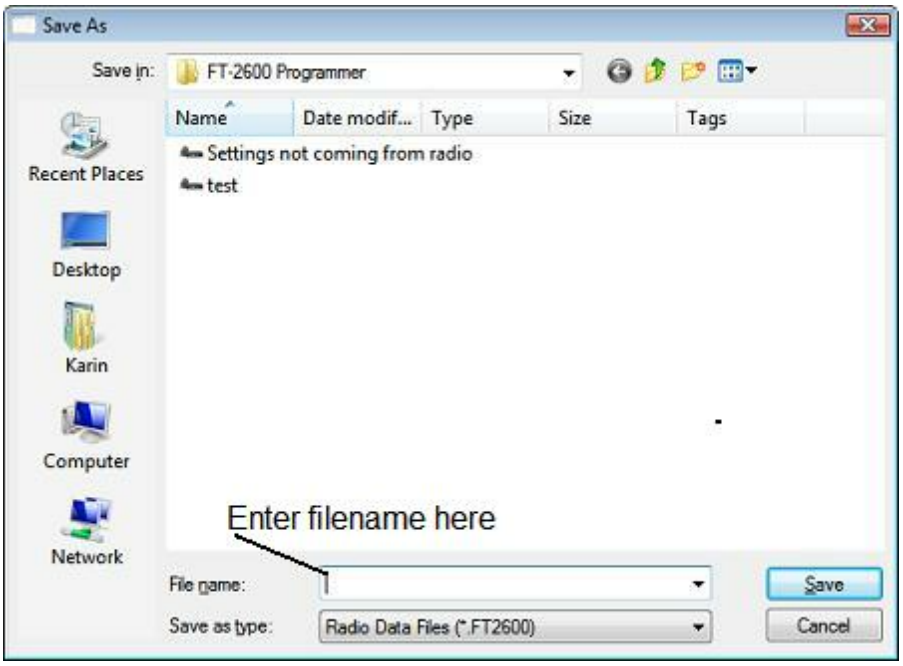
existing files is presented. You can either select one of these to be overwritten or enter a new filename. The Programmer will add the extension so you should not enter an extension or a period at the end of the filename.



- The title bar of the window changes to reflect the new filename.
- When saving a file, let the Programmer do the work. All you need to enter is the name you want for the file.

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Part

15 ARRL TravelPlus*

RT Systems' Version 4 programmers have a feature that opens a TravelPlus list in the radio programmer. This makes the data available for creating files for programming your radio without the need to import the data from a file.

This Help file contains sections on creating the list in TravelPlus* and on getting that list ready to program your radio. Takes only a few mouse clicks to have your radio programmed for that trip or other special event.

Creating a list in TravelPlus* - Brief details on this process. For more details, see the help file in TravelPlus*.

Opening the list in the radio Programmer - Details on opening the list in the radio programmer and the controls on that list.

Using the TravelPlus* list with an existing radio programming file - Sometimes you don't want all the repeaters found for an area by TravelPlus*... or you want to put what you found into a certain group of memory channels in the radio programming file. This section details how to use the list selectively in the radio file.

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15.1 Creating a list in TravelPlus*

RT Systems' Version 4 programmers have a feature that opens a TravelPlus* list in the radio programmer. This makes the data available for creating files for programming your radio without the need to import the data from a file.

These instructions very briefly cover creation of the list from TravelPlus*. It is not intended to teach you to use that program. Detailed instructions are included in this help for using the information from that list in a file for programming your radio.

Open TravelPlus* from the link provided when that program was installed. Select a location or create a route.

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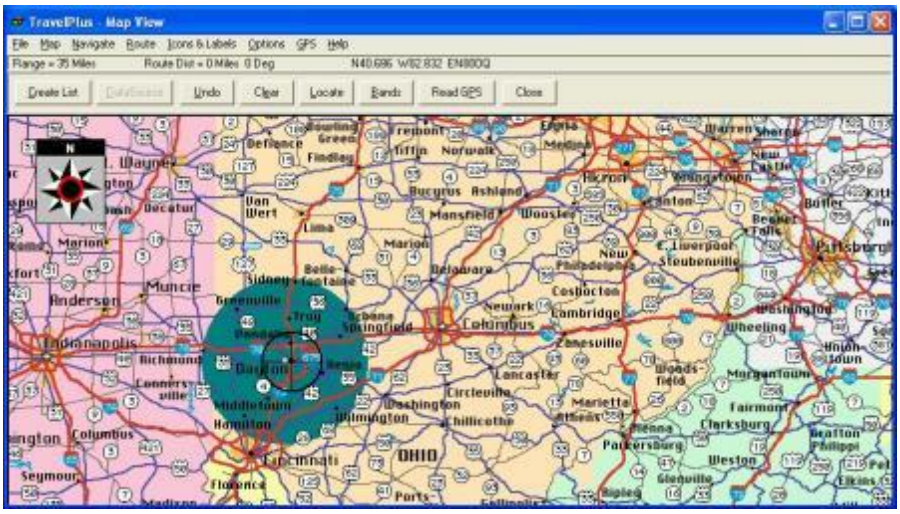
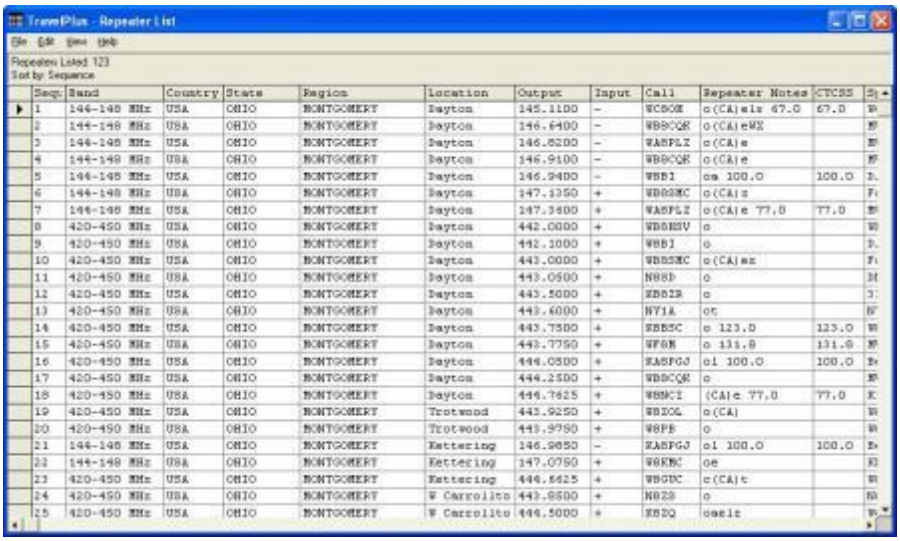


Once you have the area defined on the map, click the Create List button from the top of the screen. TravelPlus* displays the list of repeater frequencies found within your search area.



Seq.	Band	Country	State	Region	Location	Output	Input	Call	Repeater Notes	CTCSS	D
1	144-148 MHz	USA	OHIO	MONTGOMERY	Dayton	145.1100	-	WC8OH	o(CA)e1x 67.0	67.0	W
2	144-148 MHz	USA	OHIO	MONTGOMERY	Dayton	146.6400	-	WB8CQR	o(CA)eMX		W
3	144-148 MHz	USA	OHIO	MONTGOMERY	Dayton	146.8200	-	WA8PLZ	o(CA)e		W
4	144-148 MHz	USA	OHIO	MONTGOMERY	Dayton	146.9100	-	WB8CQR	o(CA)e		W
5	144-148 MHz	USA	OHIO	MONTGOMERY	Dayton	146.9400	-	WB8I	os 100.0	100.0	D
6	144-148 MHz	USA	OHIO	MONTGOMERY	Dayton	147.1350	+	WB8SMC	o(CA)s		F
7	144-148 MHz	USA	OHIO	MONTGOMERY	Dayton	147.3600	+	WA8PLZ	o(CA)e 77.0	77.0	W
8	420-450 MHz	USA	OHIO	MONTGOMERY	Dayton	442.0000	+	WB8HSV	o		W
9	420-450 MHz	USA	OHIO	MONTGOMERY	Dayton	442.1000	+	WB8I	o		D
10	420-450 MHz	USA	OHIO	MONTGOMERY	Dayton	443.0000	+	WB8SMC	o(CA)ex		F
11	420-450 MHz	USA	OHIO	MONTGOMERY	Dayton	443.0500	+	N8SD	o		M
12	420-450 MHz	USA	OHIO	MONTGOMERY	Dayton	443.5000	+	WB8IR	o		D
13	420-450 MHz	USA	OHIO	MONTGOMERY	Dayton	443.6000	+	NY1A	os		W
14	420-450 MHz	USA	OHIO	MONTGOMERY	Dayton	443.7500	+	WB8SC	o 123.0	123.0	W
15	420-450 MHz	USA	OHIO	MONTGOMERY	Dayton	443.7750	+	WF8M	o 131.8	131.8	W
16	420-450 MHz	USA	OHIO	MONTGOMERY	Dayton	444.0500	+	KA8PGJ	o1 100.0	100.0	D
17	420-450 MHz	USA	OHIO	MONTGOMERY	Dayton	444.2500	+	WB8CQR	o		W
18	420-450 MHz	USA	OHIO	MONTGOMERY	Dayton	444.7625	+	WB8CI	(CA)e 77.0	77.0	K
19	420-450 MHz	USA	OHIO	MONTGOMERY	Trotwood	443.9250	+	WB2OGL	o(CA)		W
20	420-450 MHz	USA	OHIO	MONTGOMERY	Trotwood	443.9750	+	W8PB	o		W
21	144-148 MHz	USA	OHIO	MONTGOMERY	Kettering	146.9650	-	KA8PGJ	o1 100.0	100.0	D
22	144-148 MHz	USA	OHIO	MONTGOMERY	Kettering	147.0750	+	W8KMC	oe		K
23	420-450 MHz	USA	OHIO	MONTGOMERY	Kettering	444.6625	+	WB8UC	o(CA)c		W
24	420-450 MHz	USA	OHIO	MONTGOMERY	W Carrollto	443.8500	+	N8ZS	o		N
25	420-450 MHz	USA	OHIO	MONTGOMERY	W Carrollto	444.5000	+	K8ZQ	oaslt		W

Check the list. If you don't like the results, try again. Once you are satisfied with the list, you are finished with TravelPlus*. You can exit that program or leave it running while you access the *RT Systems'* radio programmer.

Run the *RT Systems* programmer (Version 4 only). If the programmer is already running, switch to it now to create a file from this list for programming the radio.

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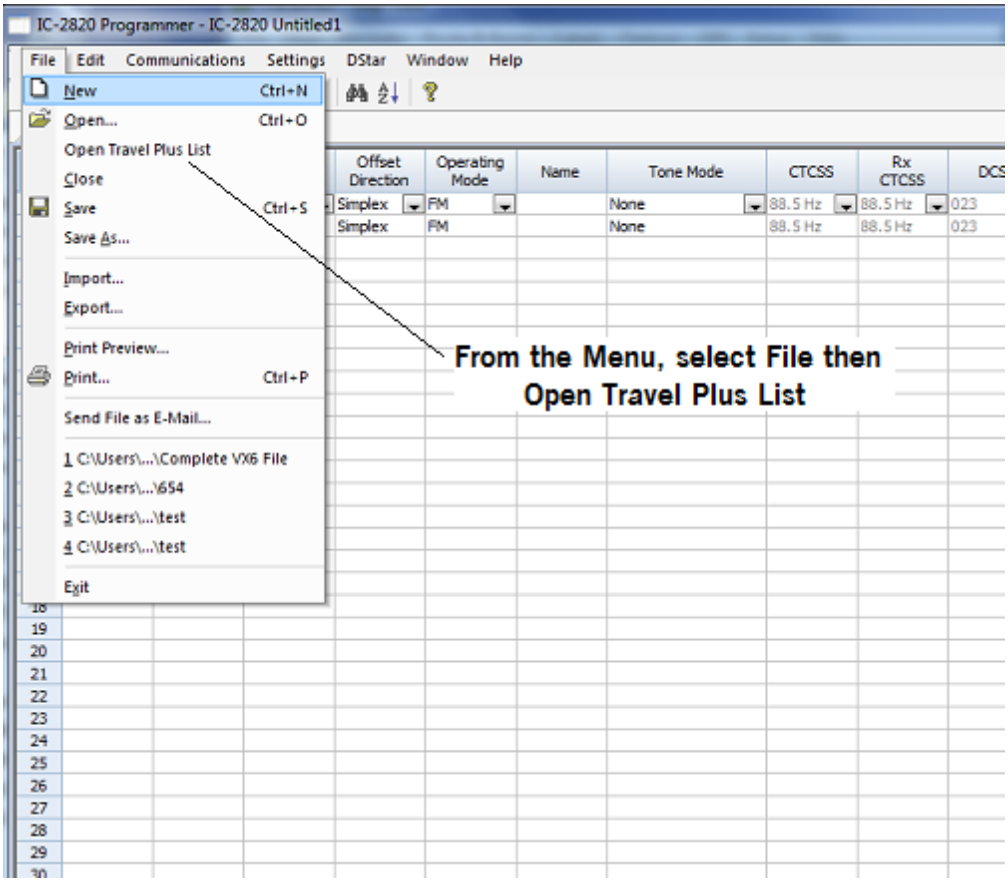
15.2 Opening the list in the Programmer

Once you have created a list in TravelPlus* (Version 10.0 or higher), open any one of the Version 4 programmers installed on your machine.

To access the list:

- Select File from the menu at the top of the screen.
- Select Open TravelPlus* list (this option was disabled until you created the list)



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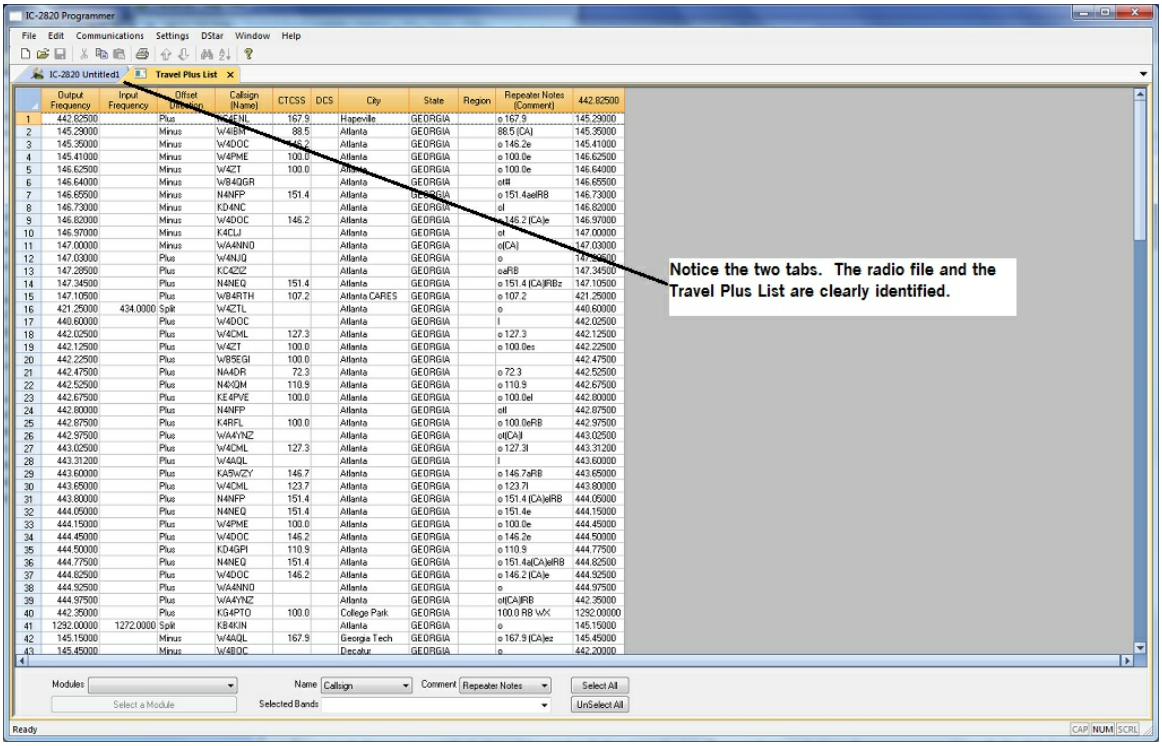
- The list appears in the window of the programmer



Customizing the list for the radio file:

Several selections appear at the bottom of the window that contains the list. These options control how the programmer will handle the data from the list in creating the radio programming file. These fields and their options are described below.

- Selected Bands: Lists the bands of the frequencies in the list. All the bands are selected by default. Uncheck those that you don't want as part of the file for the radio.

  If you are programming a 2 Meter radio with a file that contains 6 Meter repeaters, you can choose to eliminate those frequencies in this step to better understand what will be contained in your resulting file. If you skip this step, the programmer will omit these frequencies in the resulting radio file since the radio does not operate on these frequencies.

  If you do not eliminate the bands that cannot be used by your radio, the resulting radio file will contain blanks for each frequency the programmer

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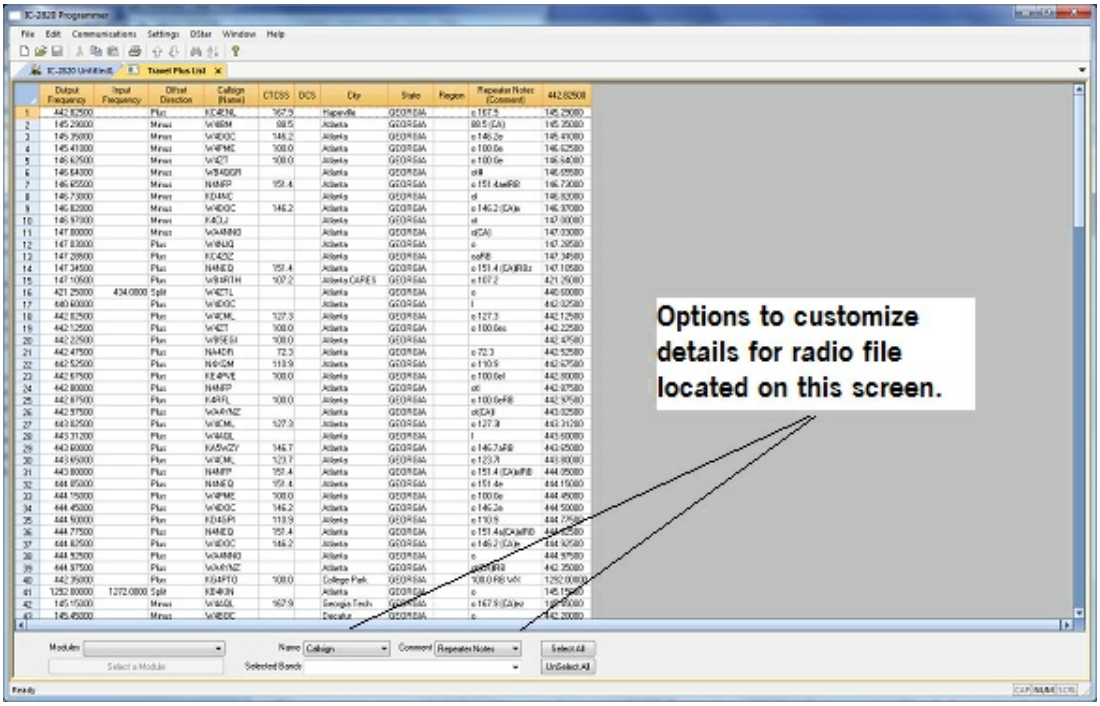
removes during file creation. Although the radio does not care, you may not want all those blanks in your radio file.

If the TravelPlus* list contains too many frequencies for the radio, using the Selected Bands option would remove unused frequencies thus lowering the number in the file and making it possible to create a radio file with all those frequencies that you want. (i.e., Your TravelPlus* file has 512 frequencies in the selected area. Your radio has 450 channels. You Select Bands and eliminate 6M, 10M and 220 Mhz Bands. The resulting list now has 432 frequencies... few enough that they all will fit into the radio file.)



- Name: The TravelPlus* list contains information that does not "match" directly to a column in the radio programmer. One of the columns in the programmer accept data from these columns is the Name field.

  Name in the programmer is the field that sets the alpha display on the radio. Generally, this display is limited to 5-8 characters depending on the radio (other than the VX-8 that allows 16 characters).

  By default, the programmer associates Callsign from the TravelPlus* list to Name in the programmer.

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You can change that association by selecting another column from those listed.

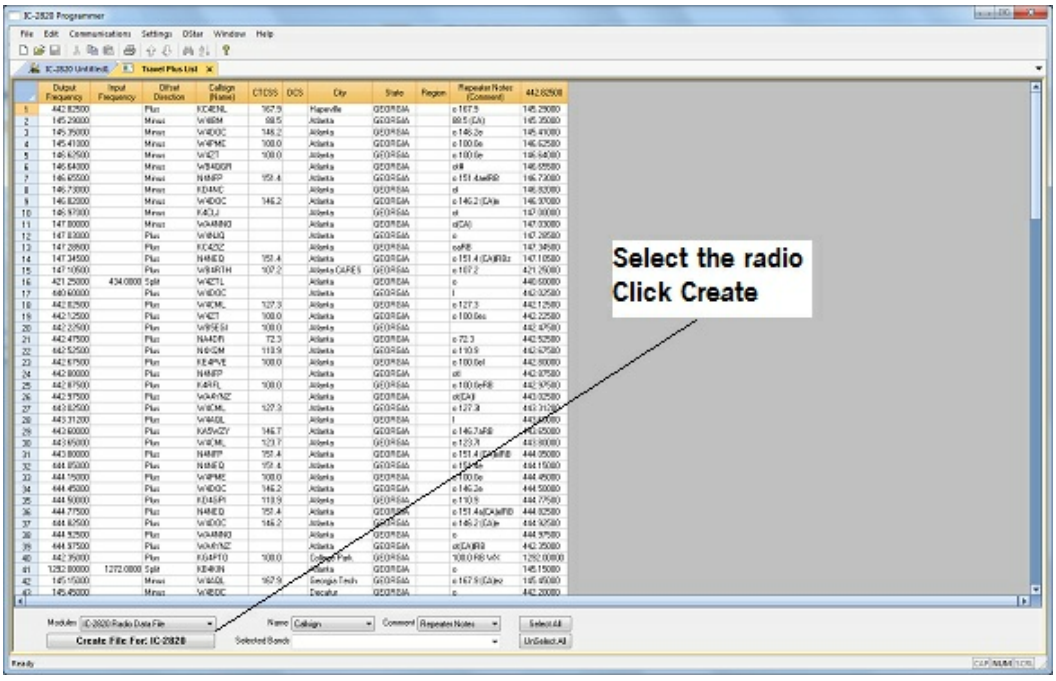
- Comment: The TravelPlus* list contains information that does not "match" directly to a column in the radio programmer.One of the columns in the programmer accept data from these columns is the Comment field.

  Comment in the programmer is a field of information that helps you while you work with the programmer. This information does not transfer to the radio.

  By default, the programmer associates City from the TravelPlus* list to Comment in the programmer.

  You can change that association by selecting another column from those listed.

- Module: Select the radio for which you want to create a file.



The resulting file appears in its own tab.

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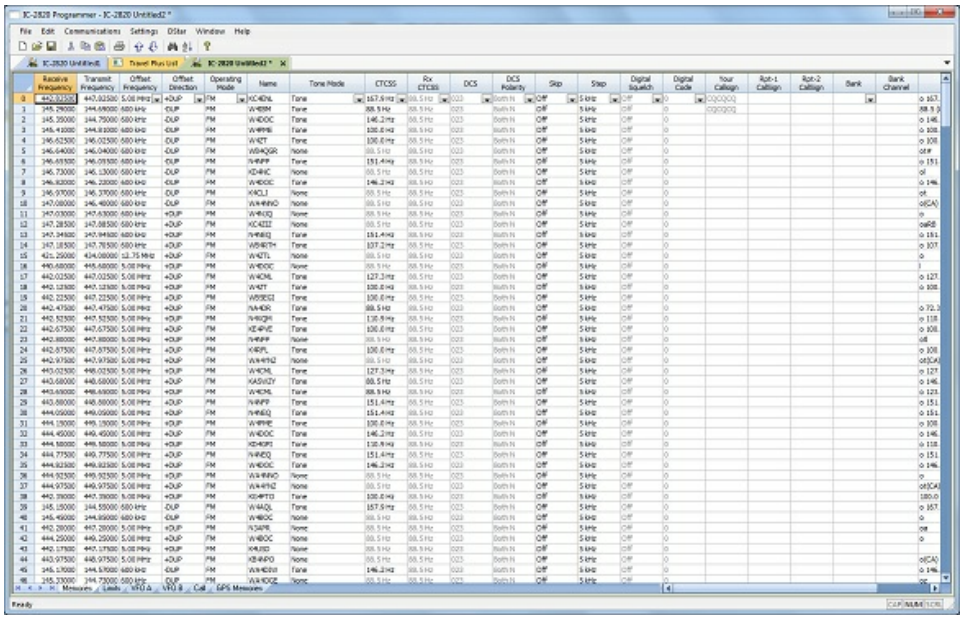

The file is ready to be sent to the radio.

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15.3 Using the TravelPlus* List with existing programmer file

You may not want to use all the information from the TravelPlus* list in a separate file for your radio. You may already have a file to which you want to add only some of the information from the List.

Using the list from TravelPlus* along with a Version 4 RT Systems radio programmer, you can copy and paste selected channels from the list to a file for your radio.

- Begin by creating your list in TravelPlus* as detailed in Creating a List in TravelPlus* in this help.
- Open the programmer.
- Open the file into which the frequencies are to be inserted.

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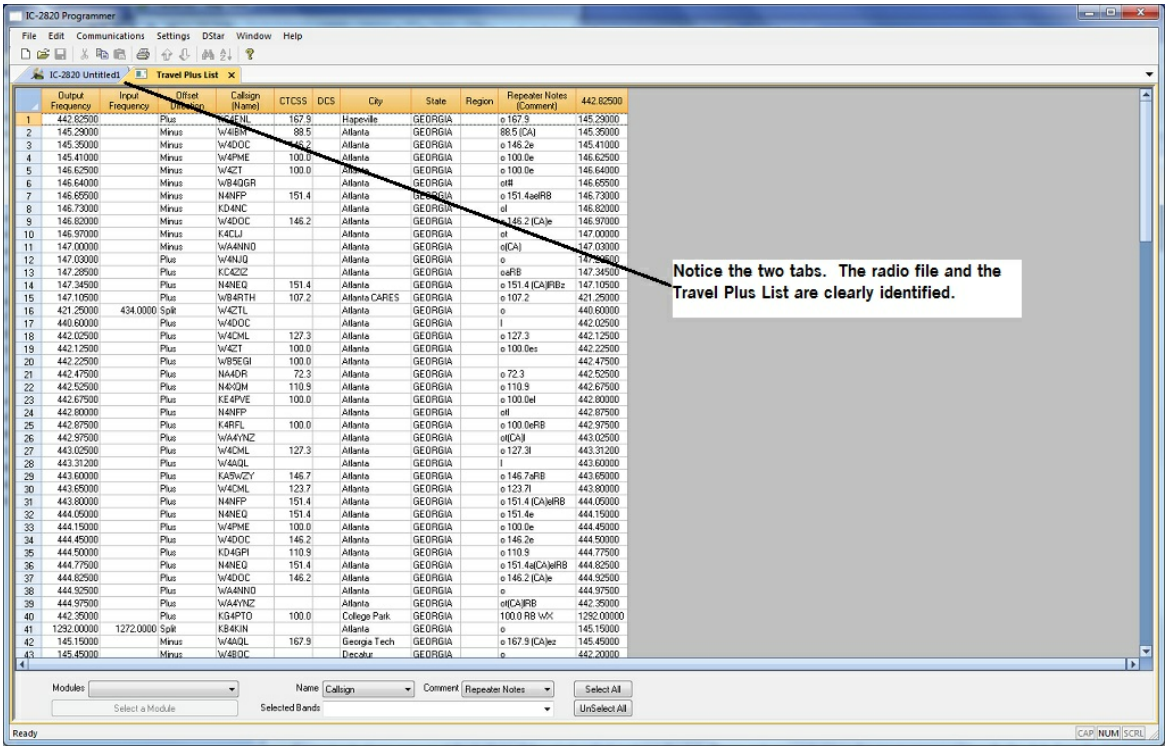
- Access the TravelPlus* list through the link in the file menu. Both the list and the file are now open in the programmer. Working in reduced screen mode is helpful with this process to let you see both files at one time.



- Select a group of channels.

  Point your mouse at the CHANNEL NUMBER (the grey shaded column on the left) and left click. Don't let go of the left click button if you want more than one.

  While holding the left mouse button, drag the mouse over the CHANNEL NUMBER of all the channels you want. If there are more than those on the screen, just keep going at the bottom. The screen will scroll to let you continue your selection.

  Note: The entire row of a selected channel will turn be highlighted. If only the Receive Frequency is highlighted, then ONLY that information will be copied.

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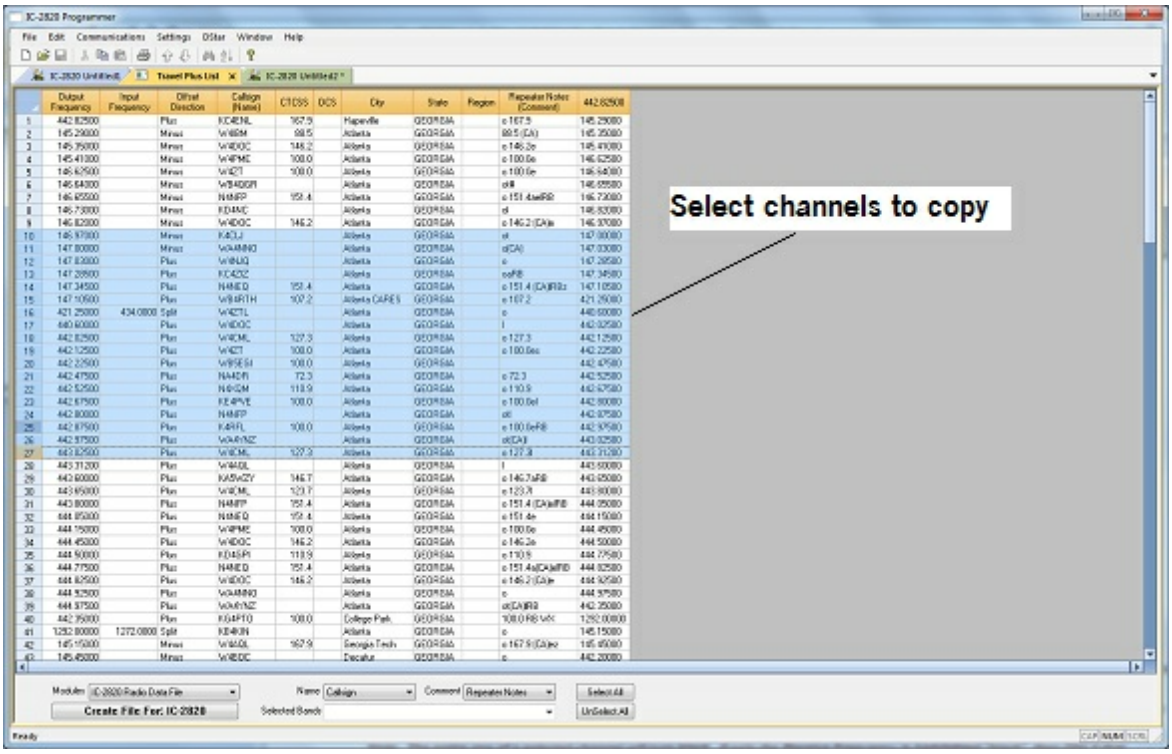

- Copy the channels

  With the mouse pointing at the highlighted channels right click and select Copy from the menu that opens.

  OR... with your mouse, left click to select Edit from the menu at the top of the screen. From the menu that opens, select Copy.

  It will appear that nothing has happened; however, Windows has copied the information.

- Use the mouse to click into the programmer file.

  Note: If you are using the programmer in full screen mode, select Window from the menu then the programmer file name from the bottom of that list to switch between the two screens.

  Alternately, you can select Window | Tile to have the programmer display the two windows equally in the main window.

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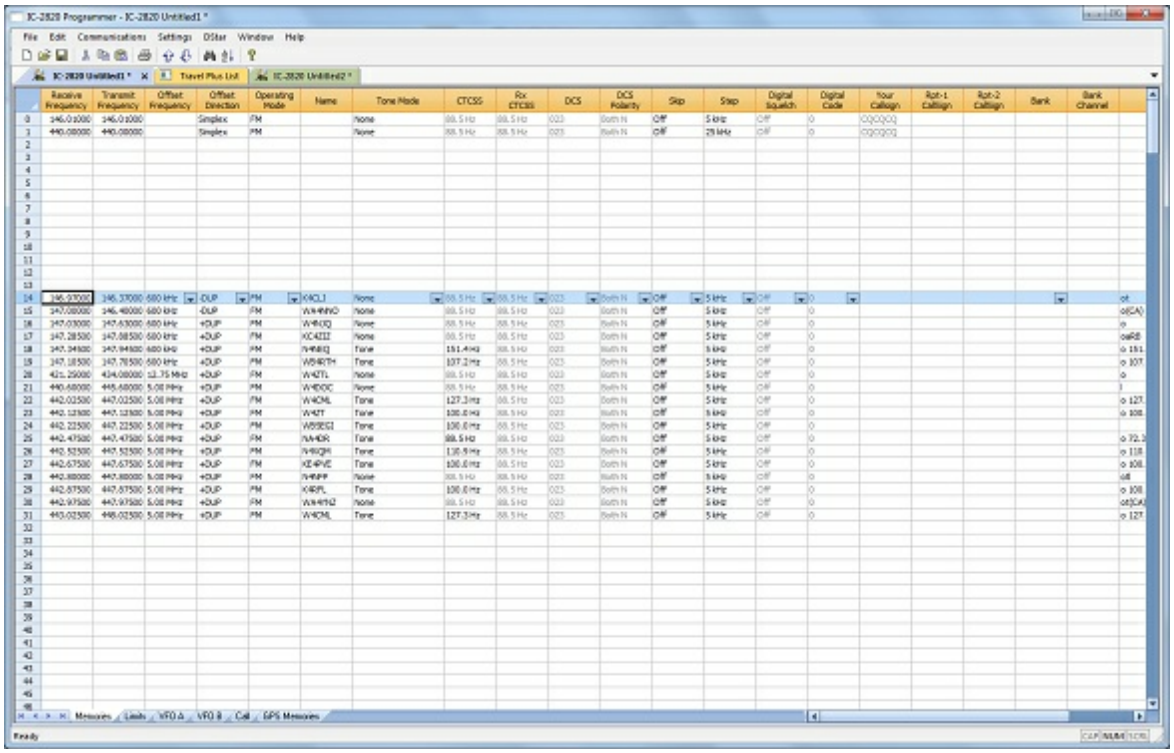
- Select the first channel in the file into which the information is to be pasted.
- Paste the information into the radio file

  With the mouse pointing at the highlighted channels right click and select Paste from the menu that opens.

  OR... with your mouse, left click to select Edit from the menu at the top of the screen. From the menu that opens, select Paste.

- View the results

  The resulting file now contains only those selected pieces of information from the TravelPlus* list along with all the original information of that file.



- Save the programmer file to make this change permanent.

  Press Ctrl S or select File then Save from the menu that opens

  With either process it will appear that nothing happens; however, Windows has made the change to the radio file permanent.

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- Send the file to your radio.

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Part XVI

16 Importing a file

The Programmer can Import data from delimited text files. These files can be created using the Export feature of the Programmer for another radio, Travel Plus for Repeaters by ARRL, commercial spreadsheet programs, or text editors.

Limitations for use of another commercial spreadsheet program include:

- The spreadsheet program will know none of the limitations of the radio. It will allow you to enter any value in any space. You will have to enter transmit and receive frequencies, CTCSS tones, and DCS codes carefully to be sure they are imported correctly to the radio.
- You will need to organize your data carefully. The Programmer will import all the items from a single column as the same thing. This can cause an odd split to be entered as Simplex or a non-standard offset to be ignored.

The easiest way to begin a text file for your Programmer is to Export a file from the Programmer first. In that exported file, you will see column headers for the details that the Programmer expects to import. You will also see the format of the information. You can edit or add to this file with any commercial spreadsheet program or text editor.

Note: The new features off the programmer include the ability to enter a series of channels by entering just a beginning frequency and the number to be entered, column editing, copy and paste of one or multiple rows of data, rearrangement of columns, hiding columns that need not be edited, and automatic completion of data based on band defaults for a frequency entered. Given that the programmer is designed for the data of the radio, you might find editing in the programmer easier than using another spreadsheet program.

The file to be imported must contain at a minimum Receive frequency to define a valid memory channel. The programmer will fill the rest of the details for that channel with defaults just as if that frequency had been entered.

The Programmer makes no assumptions about the information available. If a piece of information is omitted, the Programmer imports the memory as a simplex channel and fills other fields with defaults.

Although this process is very valid for transferring data from one radio Programmer to another and for using the data from other sources such as ARRL Travel Plus, it is not recommended for original file creation. It can be tedious getting all the information into the file to be imported just like the Programmer wants it. Let the Programmer help you

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as you create your original file with its defaults and automatic settings. Once the file is created you could export the data for other uses.

16.1 Creating a file for Import

Checking a file to use with the Programmer

If you are given a file that you want to import into a programmer for use by your radio and are not sure if it is a "flat file", test the file by opening it with Windows notepad.

If the Notepad display is full of strange characters with very little legible text, this file is not ready to be imported by the programmer. The file may or may not be able to be used for import depending how it was created and saved.

Try opening the file in Microsoft Excel or other commercial spreadsheet program. If everything looks good there carefully save the file in as delimited text (this could be called several different things in the program that you are using. If the first one you try does not produce the file format that you want, try selecting a different File Type during the save process. The details for this process are included below for Microsoft Excel.

Open the file that you created during the save process in Notepad. As before, if the display is legible data separated by commas you are well on your way. If, however, the data appears in one very long line, you should return to the original source to extract the data with line feed breaks at the end of each record.

If the Notepad display has orderly lines of legible data separated by commas, it is ready for use by the programmer. It is fine if you see two commas right together. The process can handle a blank field.

Saving an Excel file for import

If you work on a file in Excel for import to the programmer, that file must be saved as a comma delimited file before you leave Excel. The Programmer cannot import an Excel file with all its formatting codes. What it can work with is the "flat file" output of that file.

- In Excel, select File|Save as
- In the Save As window change the Save as Type to CSV (comma

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delimited) *.csv

- Enter a file name for the output file. Pay attention to the drive and directory to which the file is being saved. You will need to be able to find the file later for use during import.
- Excel will raise a warning(s) about worksheets and formatting that will be lost if the file is saved in this format. Answer to the affirmative (OK or Yes) to the message(s);eliminating the formatting is exactly what you want.
- When you exit Excel, you will be asked again if you want to save the *.csv file. If you have made no changes since you lost saved, answer No. If you have made changes, answer Yes and proceed through the warnings again to save the file again.

Limitations for use of another commercial spreadsheet program include:

- The spreadsheet program will know none of the limitations of the radio. It will allow you to enter any value in any space. You will have to enter transmit and receive frequencies, CTCSS tones, and DCS codes carefully to be sure they are imported correctly to the radio.
- You will need to organize your data carefully. The Programmer will import all the items from a single column as the same thing. This can cause an odd split to be entered as Simplex or a non-standard offset to be ignored if the data is not in a column labeled correctly or is mixed in with dissimilar data.

The Import File

The Import function is designed to assimilate some if not all of the following pieces of information for use by the Programmer. As radio features vary, so will the information to be imported (i.e., frequency ranges, the way offsets are handled, special options such as mask, clock shift, etc.)

Channel Number: If your file has channel numbers and you opt to use this column during import, your resulting file might not be what you expect.

- If the "Overwrite existing channels" option is checked: The information will

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be inserted into the specific channel no matter what is in the file at that location now . While the channel numbers can help to organize the information being imported, it can result in data being overwritten in the process

- If the "Overwrite existing channels" option is unchecked: The information from the file being imported will be skipped if there is already information in the channel. The data in the existing radio file will not be overwritten.

It is always recommended that you import into a new file to prevent data loss in an existing radio file. Once the information is in the programmer file, it can be copied into an existing file. With the copy process, you have more control of where the data is inserted into the file.

Receive Frequency: The very least a file must have to be imported is the receive frequency. This may be called the "output frequency" depending on whether you're referring to the radio or the repeater. If the column header is "Receive Frequency", the import process will recognize this label and identify the information automatically.

- Acceptable receive frequencies are detailed in the User's Manual for the radio. In the text file, the frequency should be entered in the format "MHz decimal kHz" (i.e., 146.450) with up to five digits following the decimal.
- Although, unacceptable frequencies can be entered into the text file, they will not be imported into the Programmer. They will result in a blank memory channel when import is completed.

Transmit Frequency: Enter a specific transmit frequency in the format "MHz decimal kHz" (i.e., 146.450) with up to five digits following the decimal.

This information can be omitted from the file.

- If you are importing repeater information where all the repeaters have standard offsets (none operates on an "odd" split) the import process will calculate the Transmit Frequency from other information in the file.

This information must be included in a separate column for an "odd split".

- The column cab be empty other than the specific information for those few "odd split" repeaters. The import process will calculate the Transmit Frequency from other information in the file for the other channels.
- Acceptable transmit frequencies are detailed in the manual for your radio.

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Note: In the Programmer you can enter details for frequencies outside the transmission abilities of the radio; however, the software will not enable transmission on these frequencies. Transmission will be possible only if the radio has been properly modified.

Offset Frequency: This is the amount that the Receive Frequency changes to produce the Transmit Frequency. Standard offsets in the programmer include 100, 500, and 600 kHz (0.1, 0.5 and 0.6 MHz) and 1.0, 1.6, 3.0, 5.0, and 7.6 MHz.

- In Yaesu radios any value in 50 kHz increments can be used as an offset (i. e., .650, .550, .050)
- In an Icom radio, there are no Splits. Everything must be entered with an exact Offset Frequency.
- The Offset Frequency is used by the radio along with the Offset Direction to calculate the Transmit Frequency. The Programmer does the same.
- This is one place that the import process will make an assumption for you. It uses 600 kHz for the offset for VHF and 5 MHz for the offset for UHF if no other offset is specified.

Non-Standard Offsets

The Offset Frequency can be used in conjunction with Offset Direction for a value in 5 kHz steps (i.e., any value ending in .xx5 where x is any digit from 0 to 9). This gives you the ability to use the Reverse function of the radio although your frequency pair is not separated by a standard offset value. This is considered a non-standard offset.

To use a non-standard offset in your text file enter the Receive Frequency. Then the Offset Frequency as an exact value including the decimal to denote kHz. For example, given the pair 146.650 and 147.300, the Offset Frequency entered would be .650 (decimal six five zero). And the Offset Direction as Plus or Minus. With these three pieces of information, the import process will setup this memory channel correctly for use by the radio with the most functionality.

Note: You may see this import with one of the standard Offset Frequencies; however, once the file is saved, closed and reopened, the Plus or Minus and the Offset Frequency value as entered will appear.

Offset Direction: The Offset Direction lets the Import process know whether to add

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(plus) or subtract (minus) the Offset Frequency from the Receive Frequency when calculating the Transmit Frequency for the memory channel.

Enter Plus, Minus, + or - for the process to recognize the command.

NOTE: Be sure to use Offset Direction if your file contains + and &endash; in this column. Using Offset Frequency for this column will result in all channels being imported as simplex.

Operating Mode: Enter FM, AM, or WFM as appropriate for the frequency.

Name: Enter an Alpha/Numeric tag (up to 8 characters) for the memory channel to provide an easy reminder of the function of a particular frequency. Not all radios have this available for each memory channel. Consult your Users' Manual for details.

Tone Mode: Use of the tone systems of the radio allows for silent monitoring until a call is received with a corresponding tone. Tone mode also allows access to repeaters that are made private with a PL tone. Most radios offer CTCSS (Continuous Tone Coded Squelch System) or DCS (Digital Coded Squelch) to be tailored to your particular needs. Consult your Users' Manual for details specific to your model.

Use of either of the tone systems requires two steps. Your import file will handle these steps in THREE (3) columns.

- Step 1: Turning on Tone Mode

  There are now so many different tone modes and combinations of them, we recommend that you use the designation just as it appears in the Programmer for your radio to identify the Tone Mode to be used. Examples would include but not be limited to:

  - None - Tone mode off
  - Tone - Encode
  - T Sql - Encode/Decode
  - DCS - DCS Tone
  - Others specific to your radio as detailed in the Tone Mode column of the programmer.

- Step 2: Setting the tone frequency (CTCSS) or selecting the code for the tone (DCS).

  Note: The CTCSS tone frequencies and the DCS tone codes should be stored in TWO separate columns in your file to be imported. The

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import process does not separate. It will ignore incorrect values leaving the tone set incorrectly for the channel.

- **CTCSS Tone**: Enter one of the 50 tone frequencies in the format MHz decimal kHz with only one digit to the right of the decimal.

  This value must be entered exactly as shown in the chart in the Users Manual. A value that is not in the table will result in an incorrect tone value setting in the resulting Programming file.

  This value is set independently for each memory channel.

- **DCS Code**: Enter one of the 104 codes in a three digit format (This will appear as two digits if you editor does not show leading zeroes. Two digits are acceptable when the third is a leading zero).

  This value must be entered exactly as shown in the chart in the Users Manual.

  A value that is not in the table will result in an incorrect tone value setting.

  This value can be set independently for each memory channel that uses a DCS tone.

Skip: Marks selected memory channel to be *skipped during scanning* This field should contain one of the following:

Scan, 0, or Stop to include the channel to be scanned

Skip or 1 to mark the channel to be skipped.

PScan or 2 to mark the channel as Preferential Scan

Step: The frequency being used by the radio changes by the value of the step when tuning manually. This value is used by the radio in Memory Tune mode. This value is not critical in memory mode since the original memory channel frequency can be retrieved by exiting Memory Tune mode.

Enter 5/10/12.5/15/20/25/50 or 100 as needed.

Clock Shift: Shifts the internal reference frequency slightly to eliminate "birdies" that interfere on other channels.

Enter On or 1 / Off or 0

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Tx Power: The output power can be set individually set for each memory channel to address the exact needs of each operation.

Enter High / Med / Low

Half Deviation: Enter On or Off as needed for the channel

Comments: Enter an identifying comment up to 80 characters.

You can see by the details here that creating a file for import can be a tedious process. Although this process is very valid for transferring data from one radio Programmer to another and for using the data from other sources such as ARRL Travel Plus, it is not recommended for original file creation.

Let the Programmer help you as you create your original file with its defaults and automatic settings. Once the file is created you could export the data for other uses.

The comma-delimited file can contain this information in any order. It must contain only the Receive frequency to be a valid memory channel. The Programmer makes no assumptions about the information available. If a piece of information is omitted, the Programmer imports the memory as a simplex channel and fills other fields with defaults.

This data can be entered in any order. You will identify the specifics to the Programmer during the Import process. If you find after several entries that you need another column for additional information, simply add it at the end. The Programmer will correct the order when it imports.

Save the data in your file often to prevent loss. Be sure to save the file as text with delimiters (separators) rather than as a worksheet of the program in which you are working. The Programmer cannot use a worksheet created by the other program.

To save as a text file, select File | Save (in the spreadsheet program). In the Save file window, select a different file type from the selection at the bottom of the screen. Acceptable formats are those that specify Text (i.e., .cvs, or .txt file extension).

Exit the spreadsheet program. Your file is ready to be imported into the Programmer. Changes can be made within the Programmer after you import the data.

16.2 Import - Step 1

In the Programmer select File | Import.

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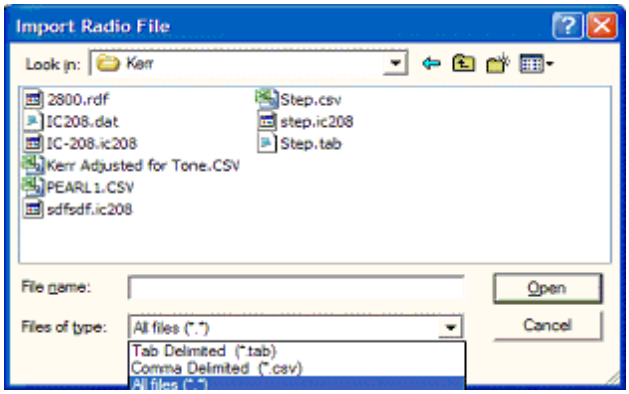
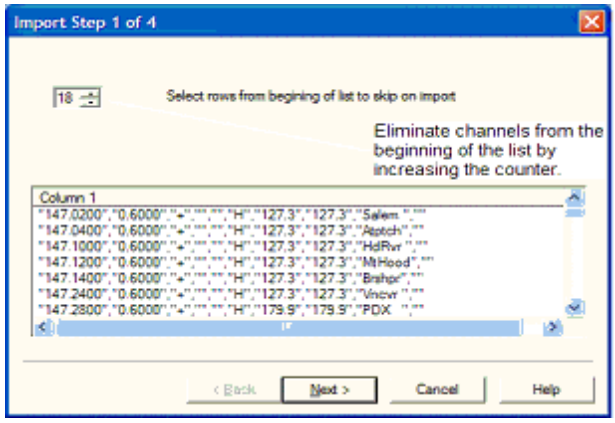
From the Import Radio File dialog that opens, select the file to be opened.



This screen gives you the ability to find and open the file to be imported.

- Use "Look in:" at the top to change directories as needed
- Use "File of type:" at the bottom to show other files in the directory you selected. Since the most common file types are *.csv and *.tab you may need to change types for your file to appear.
- Once your file is highlighted, select Open to proceed.

Import Step 1 of 4: Identify one or more of the first rows of data to be omitted



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This screen was used originally to omit headers, columns without data, from the import. This is no longer necessary.

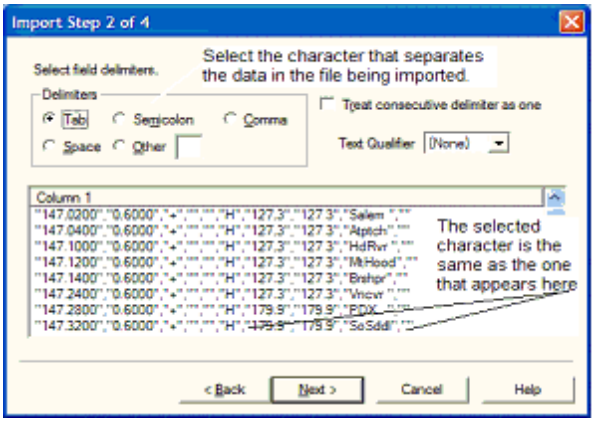
Actually, it is recommended that you leave the headers to help you more easily identify the information in a later step.

This step remains useful for eliminating a number of memory channels from the import process. For example if your file contains more channels than are allowed by the radio. You could eliminate multiple channels here rather than later in the import process.

Click Next to continue.

16.3 Import - Step 2

Import Step 2 of 4: Identify the delimiters (separators) used in your file.



The data in the file to be imported is separated by tabs, semicolons, commas, space or other non-text characters. Select from the list at the top of the screen or enter the one you used.

Once you select the correct delimiter, the data will properly separate into columns.

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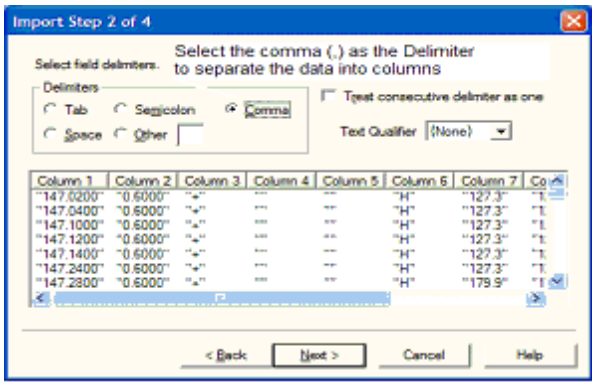
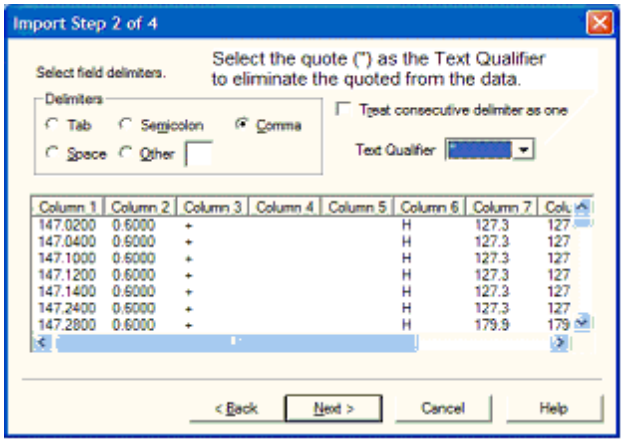


Examine the data to be sure that it is ready for the Programmer to process. Look at the data in the window. Select the proper Text Qualifier if you have single or double quotes within a data field. With quotes present, the import process will handle all the data incorrectly resulting in a blank file. Once selected, the quotes are removed and the data appears as shown.



Click Next to continue.

16.4 Import - Step 3

Import Step 3 of 4: Identify the data to the Programmer

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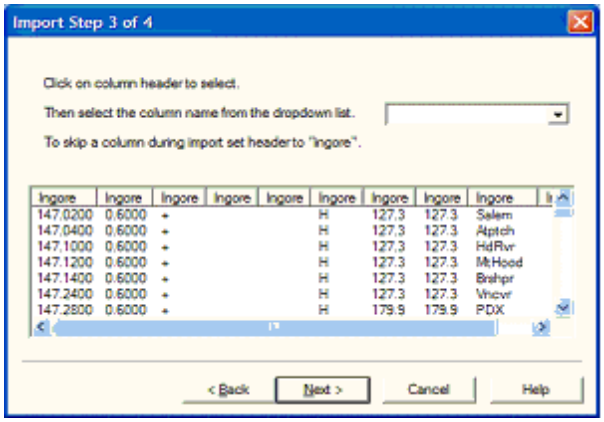
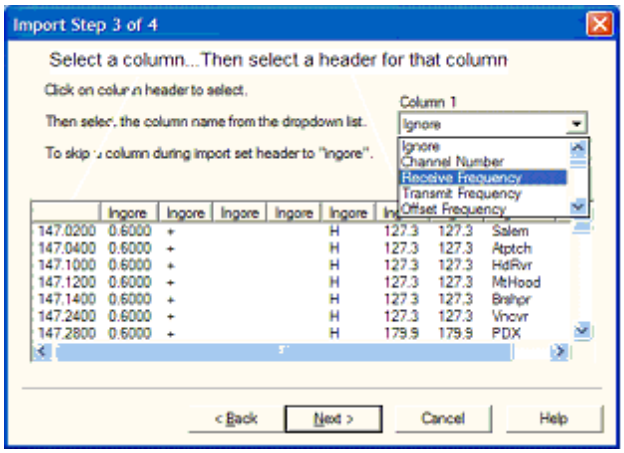
The Programmer will make an attempt to identify the information in your file. In this step of the process, you can make corrections to the assignments the Programmer has made and identify other columns that you want imported.



For the columns to be imported, select the header of the column (the little grey box just above the column) then select the proper identifier from the drop down list at the top of the screen



You need to identify only those columns to be imported.

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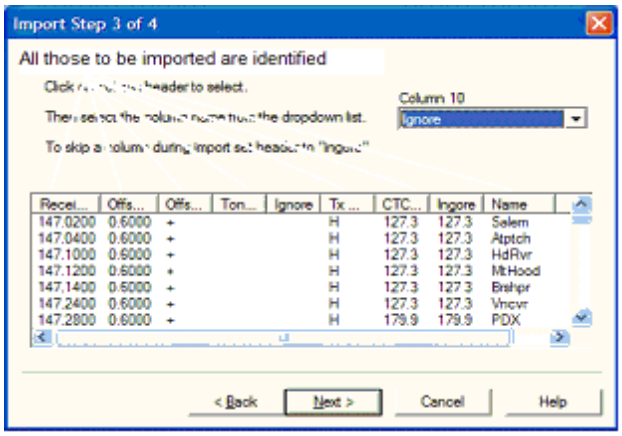
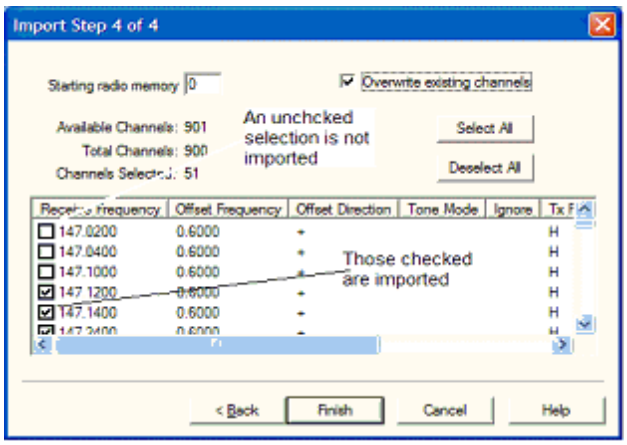


Click Next to continue.

16.5 Import - Step 4

Import Step 4 of 4: Limit the channels that are imported by the Programmer

Again, you can make adjustments to the data to be imported without having to edit the original file. Select all or any part of the list by checking the box at the left of the screen.



Since the data can be imported into an existing file, use the boxes at the top of the screen to place the data in the file where you want it to appear.

- Starting radio memory - Insert the channels into the file somewhere other

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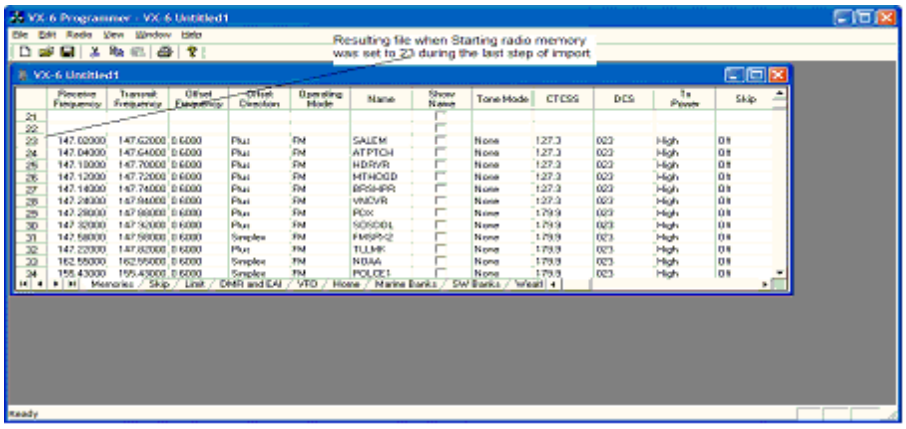
than at the beginning (i.e., At the end of a list that has the last channel of 21. Enter 22 in this box to begin with the next memory channel of that file).

- Overwrite existing channels - Tells the process to replace data it finds in the existing file or to skip that data and write in the next available channel. For example:

- Unchecked - If you import into a file with memories in channel numbers 1-10, 12, 15 and 16 the process would write the imported channels in order to 11, 13, 14, then 17 on to the end of the imported list.

- Checked - If you import to a file with memories in channel numbers 1-10, 12, 15 and 16 the process would write the imported channels in order beginning at channel 1and continue in order to the end of the imported list. The existing channel data of the file would be lost in the process as it is replaced with that of the imported file.

- Finish - Click to compete the process. The resulting file in this example would look like this:



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Part XVI

17 Export

The programmer can export, "convert" , the data of a radio programming file to a flat file for use in other programs. This will create the file that you need is someone asks you for a "csv" or Excel file.

You control two parts of export

What is exported from the file

Where the exported file is saved on your hard drive.

What is exported from the file

The file created through export contains the data on the screen that is open when the process is begun.

If a radio has Right Memories and Left Memories, it will export the data of the Right Memories when you are viewing that screen when the process is begun and the data from the Left memories if you are viewing that screen.

Each export should be directed to a separate file. If you use the same filename, you will replace the data from the first export with that of the next.

Where the exported file is saved on your hard drive

Select the section of the file to be exported.

Click File | Export

A Save dialog box opens. You have complete control of the filename and location of the file on your hard drive in the options in that Save dialog box.

Pay close attention to the filename and directory designation of the resulting file. You want to be able to find it easily later.

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Part XVI

18 Troubleshooting

Technical support is available from *RT Systems* at the times and number shown in the *Contacting RT Systems* of this help.

As issues are addressed by Techsupport personnel, the issue and the result are often detailed on the FAQ page of www.rtsystemsinc.com Check there for additional information that might pertain to the exact issue you're seeing with your radio.

Detailed here are several of the more common problems that you may want to check before you contact technical support.

"The data from the radio will overwrite this file. Continue?"

This message will be raised by the programmer when you select Communications | Get data from radio with a file open that is not a new (default) file into which no entries have been made.

This message is warning you that you will replace any information you have entered with whatever is in the radio. The "whatever" could be all blank channels.

Answer "yes" if you want to lose all the information that appears on the screen. Answer "no" if you don't want to lose several hours of work spent creating the file on the screen. To prevent loss of information, first do File | New to open a new (default) file. Then while looking at that file, do Communications | Get data from radio and complete that process. Your file will drop to the background and be protected from during this part of the process.

Once you complete Communications | Get data from radio, return to your file a) select the tab at the top of the page; or b) select File | Open and open the file from the list presented (if you closed it some time during the process.)

Program cannot find cable

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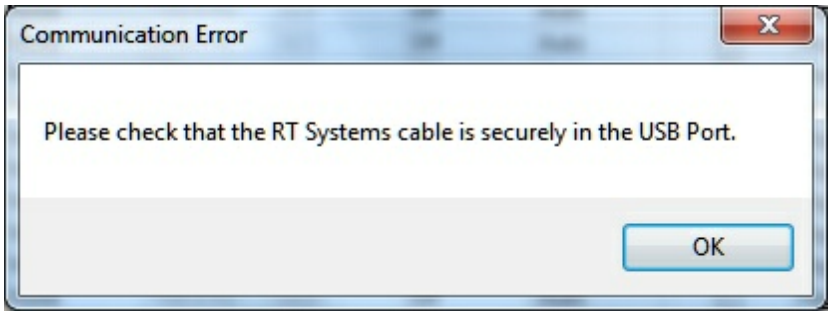

This message can appear when you are attempting to get data from the radio or send data to the radio. There can be several causes. The most common are:

The cable is not attached to the computer or you have the wrong programming cable attached. The cable for this radio is pictured in the ***Computer to radio cabling*** section of this help.

The communications process was accessed too quickly after the cable was attached. It can take some computers a minute or more to recognize the cable properly. Give the computer a little more time and try again.

The problem may lie in the electronics of the cable. If this is the first time you have attempted this process, contact RT Systems for assistance. This can be corrected easily in just a few minutes with the computer and an Internet connection. *Note: This can be corrected using a machine that has an Internet connection that you don't plan to use for the programming software. The software for the radio does not have to be installed to complete the correction.*

HotSync, the program for the Palm Pilot, is running on this computer. Hotsync immediately takes control of an available comport. Since the RT Systems programming cable establishes a comport, Hotsync takes control before you have a chance to use it. Look for the icon, red and blue arrows chasing each other, in the tray at the right of the task bar. If found, right click and exit. That program will load again when you re-boot your computer. You will need to disable this software any time you program your radio.

Interference from other cables attached

The Programmer is designed to find the cable to be used by this radio for programming. This process is done through special identifying numbers programmed into the electronics of the USB connector.

The process looks at each USB device attached. Other items attached, especially other programming cables, may cause the programmer to wrongly identify the cable it

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must use for a specific radio.

Two different errors can occur in this configuration. Either the programmer will report that the cable is not attached to the USB port or the Communications process will not respond since the data being transferred from the radio (you did press all the right buttons) is traveling along a cable other than that the programmer is connected to.

Interference from other applications

Your radio is not the only device you attach to your computer for programming or data interchange. I-Pads, I-Pods, Palm Pilots and other PDA devices, printers, cameras and others all install programs for their use. Unfortunately, many of these programs run constantly looking to be used any time a cable is attached.

These programs take control of the cable even if it is not for their device. This renders the cable useless for its intended purpose.

You may not even be aware that these programs are running. You may have sold the device months ago; but unless you took steps to permanently disable the software for it, the problem remains. These programs run start whenever the computer is started or brought back from hibernation then run in the background with little indication that they are there.

Begin checking by hovering over each icon at the lower right of your screen. Those in the taskbar. A name will appear as you pass over each. You may recognize the one that needs to be disabled. Usually an option to Exit or Close will be available from a right click menu. Don't worry about exiting something you might need. The application will begin again when you restart your computer.

After addressing a program, check in the programmer. You should be able to click OK on the Communications | Get Data from screen and have the process continue instead of raising the error message.

Tech support at RT Systems will be glad to help you with this; but we are limited given this is an issue specific to the applications running on your machine. You are welcome to contact us for help with this issue.

Defective Cable

Cables from RT Systems are 100% tested prior to packaging. Even with this level of control, occasionally a cable fails in the field. Contact RT Systems tech support if to determine if the cable is at fault and a replacement is needed.

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A replacement can be initiated when you send a copy of your receipt as proof of purchase and the issue has been diagnosed with a tech support representative at RT Systems. In this case, a replacement will be sent immediately with a prepaid label for return of the defective item. The replacement will be sent to the address on the receipt.

If the receipt is not available, return the original cable for replacement. A replacement cable will be sent immediately when the defective item is received at our location.

USB Driver Installation

On some systems running Windows 2000 or early versions of XP, the drivers for the cable will need to be installed manually. This is a normal thing in the USB world and is easily done.
We are *RT Systems* will be happy to help you through this process.

With the USB cable detached from the computer, start the New Hardware Wizard from the indication for the device in the Device Manager.

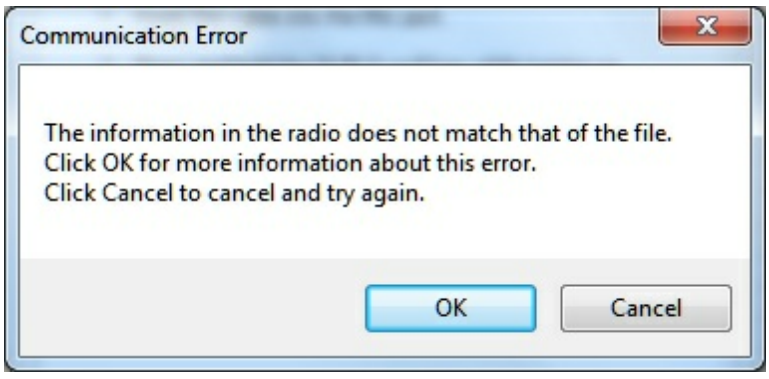
The drivers have been installed on your machine in the following directory.

C:\Program Files\Common Files\RT SystemsV4\RTDrivers\USBComDrivers\Drivers

Run the New Hardware Wizard twice. The first time use ftdibus.ini in that directory. The second time use ftdiport.ini in that same directory.

Then attach the cable again. Check in Device Manager to be sure it is now listed under Ports (Com and Lpt) with a comport designation assigned.

Modified Radio



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This error is raised when you attempt to send a file to a radio that is modified before the programmer is given that information.

If your radio has been modified, you must complete Communications | Get data from radio into a new file before you attempt to write data to the radio. When the Get data from radio process is used, even if the radio is not yet programmed, the Programmer gets the data it needs to know that the radio is modified.

When you use Communications | Get data from for the sake of establishing communications, you need to save the file ONLY if you want to save the memory data that is currently in the radio. The Programmer already has what it needs. The option to save is available should you want to save the pre-programmed data.

Cabling to properly address the radio

The Version 4 RT Systems Programmers work only with the

- ***RT Systems' USB cables OR***
- ***Original RT Systems' serial cable with the RTS-03 USB to serial adapter.***

No other USB cable will be recognized by the programmer.

RT Systems' programmers address over 50 different radios. Of those, some program through the speaker jack, some through the mic jack, some through the data jack and some through the CAT port. These ports must be addressed by the correct cable for communications to be successful.

Be sure to use the correct cabling to address the radio being programmed. Check the User's Manual for the radio if you are not sure where the port is on the radio that is specified in the programmer. The cables for this particular radio are pictured in the *Radio to Computer Cabling* section of this help.

Specific to the FT-857/D and FT-897D: The cable used for programming is the USB-62 cable with the 8-pin mini din plug. This plug is attached to the CAT jack on the back of the radio. Forcing this connector into the data port will ruin the plug and could damage the radio. There have been cases where the power pin and the PTT were connected (since you never know which pin will go which way when you force them out of place) causing several hundred dollars in damage. Check to be sure you are connecting the cable to the matching jack before forcing the pins into the holes.

At the time of this writing (2009), none of the Yaesu VHF/UHF mobile radios used the USB-62 cable with its 8-pin plug. We have seen this tried. It will not work. The mobile radios that program through the data jack require a 6-pin mini din connection on the

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cable. Check the cabling specified in the help for the radio that you're programming to be sure that you're using the right one to address the radio.

Icom specific issue for Clone mode

Other than the Icom IC-R10, at the time of this writing, Icom radios are NOT put into CLONE mode for programming. CLONE mode is used only when you transfer data from one radio to another.
The process for programming the radio from the computer is simple. When the instructions say to "Turn the radio on", do just that, press the power button to turn it on. If pressing a key is needed as a part of this step, it will be included with the instructions on the Get data from screen.

Yaesu Radio does not go into Clone mode after initial menu selection

Many Yaesu radios, handheld and mobiles, access Clone mode from a startup menu. When you turn the radio on holding the specified key, you are in that menu with several options of radio functions. Clone is only one of these options.

Once the Clone option is found in that menu, another key on the radio is pressed to activate that mode. You know the options has been activated when the radio cycles off and back on. Only then is it in Clone mode and ready to program.

If the radio does not cycle off and back on when that next button is pressed, one of the following may address the issue:

> The keys on the face of the radio are locked. Turn the radio off and back on in normal mode to check for the Lock symbol on the screen. Unlock the keys and try again.
>
> You have pressed the designated key too long or not long enough. Try again until you get the feel for the process.

Yaesu Radio does not change to Tx or Clone Out when button is pressed

Many Yaesu radios have a key sequence that starts Clone mode without having to select that option from a startup menu: the radio simply comes on in Clone mode.

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With CLONE displayed on the face of the radio, a button is pressed to begin communications.

If the radio comes on displaying CLONE; but then is unresponsive when the button is pressed to begin (i.e., the screen does not change from Clone) check these two common causes:

First, be sure you are using the correct cabling for the radio being programmed. If an adapter was included with the kit, use it.

Check that the keys are not locked. To check, turn the radio off. Turn it back on in normal mode and check for the Lock symbol on the screen. Unlock the keys from the face of the radio and try again.

Windows Version Compatibility

The Version 4 Programmer is designed to work with Windows XP, VISTA (32 or 64 bit) or Windows 7 (32 or 64 bit).

RT Systems no longer supports use of the programmers on Windows 98, Windows 98SE, Windows 2000, or Windows ME.

Note: If you plan to use an older computer for programming your radio, you may experience problems with the program resulting from files that are missing from the operating system. These files would have been delivered through normal Windows updates to the operating system.

If the machine has been out of service for several years, set it up with an Internet connection and Automatic Updates activated. Let it sit for several days while it finds what it needs.

Once the updates are installed, you will have no other problems related to the operating system relative to the programmer.

NACK/ACK Error

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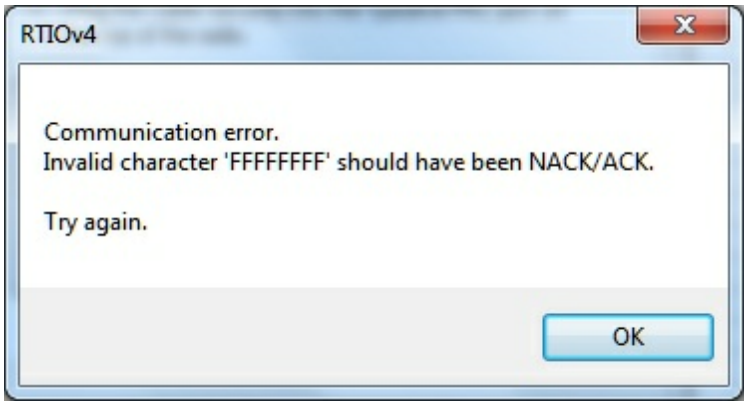

As ugly as this error appears. it actually is only a generic message saying the Communication process failed. Try again after reading the hints here.

Do NOT turn the radio off. It may display Error. It is not terrible unhappy and is still in Clone Mode.

Cancel all Communications screens that are open in the programmer.

Open a new file (File | Open form the menu at the top of the screen).

Select Communications | Get data from radio. Doing Get Data from often gets the process going.

Skip the steps for putting the radio into Clone mode. It is already there.

Click OK

Press the key as instructed to begin the process (sometimes you need to press it twice... once to return to Clone mode... then again to begin the process.)

Once Get data from is successful, attempt Send data to. In this scenario, you can skip the steps to put the radio into Clone mode since it usually remains in Clone mode after Get data from is completed.

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18.1 Get Data from Radio Required

The first time you attempt to send your file to the radio, this message may appear.

This indicates that you have not read the configuration of the radio into the programmer.

There are details that the programmer can get only from the radio. Even if the radio is not yet programmed, these "background" details are necessary for the programmer to send a file to your radio successfully.

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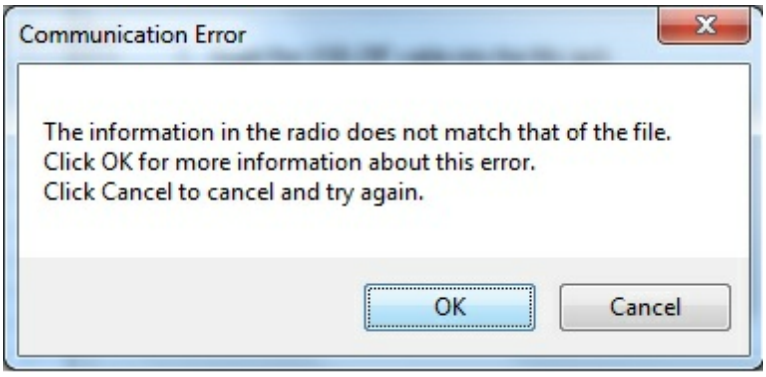
Part

19 Hardware Error Troubleshooting

"Well of course the information in the radio and the file do not match. I just made changes to the file and I want the different information in the radio!!"

This is a common first reaction to this error. However, that is not the file information involved in this error. There are several causes for this error. They include incorrect key strokes on the radio, interference on the computer by another application or device, a faulty cable or the presence of a radio that has been modified for out of band use.



Below are various steps offered as corrections. At the end of each section try again to transfer data to the radio again.

Try this First

The error most likely indicates that "behind the scenes" information about the radio does not match that of a factory radio. This is most common when a radio has been modified for our of band transmission.

1. Create a new file (press Ctrl M on the keyboard or select File | New from the menu at the top of the screen). This protects the file that you are trying to send to the radio.

2. Select Communications | Get data from Radio from the menu at the top of the screen.

3. When this is completed successfully, return to your file (click to tab at the top of the screen that displays the filename or select File | Open to reopen your file.)

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4. Select Communications | Send data to Radio. Be careful to follow these steps shown on this screen. Generally, they are different from the Get Data from radio steps.

Radio Issues

"Error" is displayed on the radio.

"Behind the scenes" information about the radio does not match that of a factory radio. This is most common when a radio has been modified.

1. Create a new file (Ctrl M or File|New)
2. Execute Communications | Get data from Radio. This is the only way this "behind the scenes" information can be obtained for your radio.
3. When this is completed successfully, return to your file.
4. Execute Communications | Send data to Radio begin careful to follow these steps since they are different from the Get Data from radio steps.

The radio does not change when "OK" clicked on the screen in the programmer (never indicates receive).

There is no communication between the radio and the computer. Check through the Cable issues to be sure you are using the right cable and that it is connected properly to the radio and to the computer.

The radio never goes to CLONE.

On many radios you hold buttons during power on to access a startup menu. Once you select the clone option of the menu (the radio is ***NOT YET IN CLONE MODE***). You press a key to accept the CLONE option. When you press the button to access the startup menu option, the radio does not change.

1. The keys on the radio may be locked. Turn the radio off then back on in normal mode to check for a lock symbol on the screen. If the keys are locked, unlock them. Once unlocked, power off the radio and begin the Communications process again.
2. The key specified is "touchy" and responds if it is touched just the right way.

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This has been the case on several of the mobile radios. Try again with a shorter or longer touch on the button. When you get that touch just right, the radio will respond.

3. The wrong cable is being used. This is true for several of the hand held radios that use the 4-pin plug. If you attempt this process with a stereo plug, the radio will not respond when you attempt the cloning process.

The radio never went into send (TX) mode (Get data from radio process).

Now that the radio is in Clone mode, one more button press is required to start the data transfer (Get data from) or to make the radio ready to receive the data (Send data to).

1. The wrong cable is being used. This is true for several of the hand held radios that use the 4-pin plug. If you attempt this process with a stereo plug, the radio will not respond when you attempt to access the Clone option of the startup menu.

2. The keys on the radio are locked. Turn the radio off then back on in normal mode to check for a lock symbol on the screen. Once the keys have been unlocked, power off the radio and begin the Communications process again

Radio is not on at the time of data transfer.

This can get the process "out of sync". Cancel the Communications screen on the computer. Then access that screen again and start over with turning the radio on in Clone mode. Be sure the battery is charged on your handheld radio or that you are connected to external power to prevent an unexpected shutdown during this process.

General Issue

Followed the Steps Incorrectly or executed the wrong process.

Get data from the radio:

1. Go to “Communications” in the top menu.
2. Click “Get Data from Radio”.
3. Read and follow each step. (Remember, the keystrokes are different for each

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radio. They are detailed for a particular radio on the Get Data from radio screen. The trick is to follow each step... one at a time.)

Send data to the radio:

1. Go to “Communications” in the top menu.
2. Click “Send Data to Radio”.
3. Read and follow each step. (Remember, the keystrokes are different for each radio. They are even different for this process than they were for the Get Data from Radio process. They are detailed for a particular radio on the Get send data to radio screen. The trick is to follow each step... one at a time.)

Cable Issues

Check that you are using the correct cable for this radio.

Many radios have jacks that will accommodate the programming cable from a different radio. Although the cable fits in the jack, the radio does not accept programming through the wrong jack.

You can see the cables for each radio by clicking on Programming Cable Chart

Check that the cable is securely in the USB Port.

Be sure it has not pulled loose (this is easy to do with a USB). Also, the cable should be plugged into a USB port on the computer rather than on a USB hub.

Check that the cable is plugged into the radio securely.

On cables with 6- or 8-pin round din plugs, you may want to check that the pins are not bent in such a way that they are making a bad connection. Unplug the cable from the radio and check by looking at the pins in the plug.

On cables with 4, 6, or 8 pin modular plugs that address the mic jack, push the cable toward the connector to be sure the modular plug is plugged into the mic jack completely. There can be a good bit of play between the mic jack and the plug. Hold the cable securely until the process is complete.

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Part

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Technical support	303-586-6510
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Web Page	www.rtsystemsinc.com Program updates Answers to frequently asked questions can be reviewed under FAQs on our site.
E-mail	techsupport@rtsystemsinc.com Should you choose to send a message via e-mail, be sure to include at the very least the following details: • The radio with which you use the Programmer • The version number of the Programming software

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(found in the Programmer under Help | About)

Based on the information given, we will respond as quickly as possible.

Be sure that rtsystemsinc.com is set as an acceptable address for your e-mail program. Or watch for your response in your spam or junk mail folder.

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